TECHNOLOGY DEPT.

FLIGHT MAGAZINE

Including SOUTHERN FLIGHT and MODERN AIRPORTS

JANUARY 1951

35 cents

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DETROIT

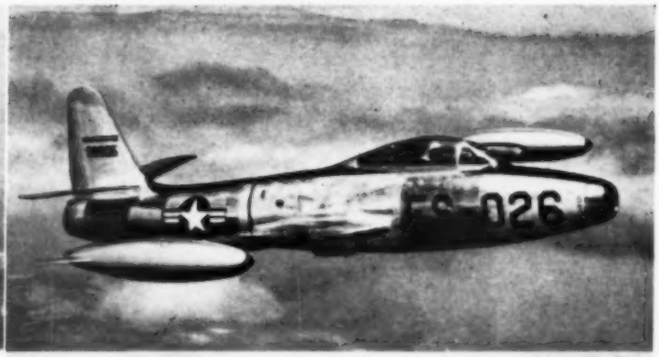
AERO COMMANDER

(See page 18)

VR v.35-36 1951

LOCKHEED F-80 SHOOTING STAR POWERED BY ALLISON J33 TURBO-JET

REPUBLIC F-84 THUNDERJET POWERED BY ALLISON J35 TURBO-JET



Experience where it counts most --*in the air*

The U. S. Air Force and U. S. Navy have accumulated more than 500,000 hours of actua! flight operation with Allison Turbo-Jet engines in the aeroplanes shown on this page. This is more time *in the air* than the jet engines of any other manufacturer in the world.

Represented in this broad background of experience are thousands of hours of flight time on both J35 axial and J33 centrifugal flow engines — with and without afterburners — on the two models.

Now two new Navy planes are flying with Allison Turbo-Prop power. Here, too, Allison is the leader with its Navy-sponsored T40 twin Turbo-Prop engines out in front gaining in-the-air experience.

It's experience that counts — and these turbine engines have it where it counts most — in the air — in these airplanes.

Allison J33 engines also lend assistance to reciprocating engines in the Martin P4M and North American AJ-1.

Allison

DIVISION OF GENERAL MOTORS
INDIANAPOLIS, INDIANA

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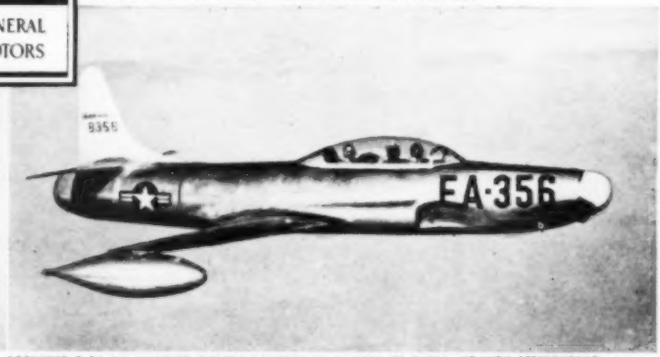
GRUMMAN F9F-3 PANTHER POWERED BY ALLISON J33 TURBO-JET

NORTHROP F-89 SCORPION POWERED BY TWO ALLISON J35 TURBO-JETS WITH AFTERBURNERS

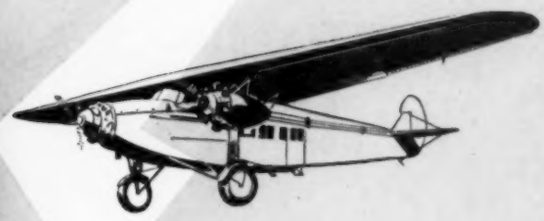
DOUGLAS A2D SKYSHARK POWERED BY ALLISON T40 TURBO-PROP

CONSOLIDATED P5Y FLYING BOAT POWERED BY FOUR ALLISON T40 TWIN TURBO-PROPS



LOCKHEED F-94 ALL-WEATHER FIGHTER POWERED BY ALLISON J33 TURBO-JET WITH AFTERBURNER

Ignition Headquarters



for Over a Quarter of a Century

Since aviation's earliest days Bendix has dedicated its resources and manufacturing skills to the solution of the industry's ever changing ignition problems. Thus today, one source and one source alone—Bendix—is *uniquely qualified* to plan and produce ignition equipment specifically designed to meet the operating needs for every plane and purpose.

No single type of ignition equipment is the final solution to every operating problem. Let Bendix experience help you determine the type of ignition equipment best fitted for your specific purposes.

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CONSOLIDATED PSY FLYING BOAT POWERED BY FOUR ALLISON T40 TWIN TURBO-PROPS

LOCKHEED F-94 ALL-WEATHER FIGHTER POWERED BY ALLISON J33 TURBO-JET WITH AFTERBURNER

ANNOUNCING THE 1951

SUPER CUB

with 125 HORSEPOWER and DURACLAD Finish

From canyon bottoms of the Colorado River to barren islands in the Bering Sea, the Super Cub has hauled loads in and out of places no other commercial plane can go!

Now with 125 horsepower for 1951, the Super Cub's performance is made even more spectacular. The Super Cub "125" cruises better than 100 mph, takes off in less than 100 feet, flies as slow as 33 mph and lands within five lengths of its own fuselage! With a 1,500-pound gross weight, it clears a 50-foot barrier in 600 feet!

Added, too, for 1951 is the remarkable new Duraclad finish, standard on all Piper planes—a nonflammable, plastic covering which is tougher, longer lasting—ideal for lowest cost maintenance.

When flown under new special-purpose flying provisions of C.A.R., the Super Cub can easily handle a 1,000-pound load. With a half ton on board, the Super Cub clears a 50-foot barrier in 950 feet.

On floats, skis or tandem gear, the Super Cub is a most versatile airplane—widely used by farmers, ranchers and sportsmen as well as operators. See your dealer for a demonstration. You've never flown anything like it! For brochure write Dept. F-1.

The Super Cub is also available with 90 horsepower—an ideal plane with abundant performance for training and general utility work.

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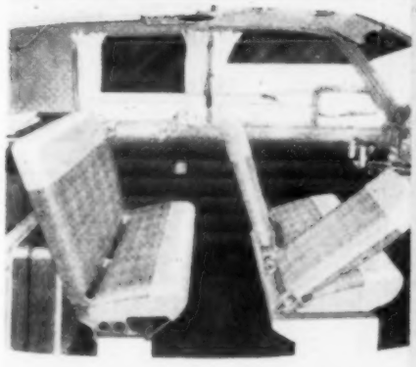
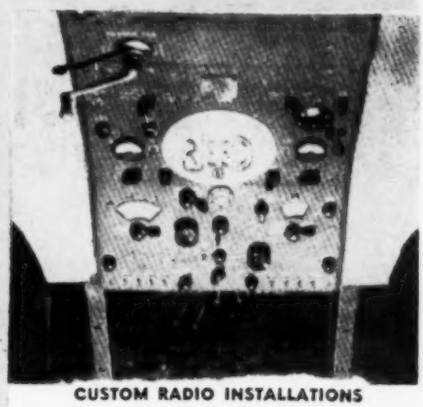
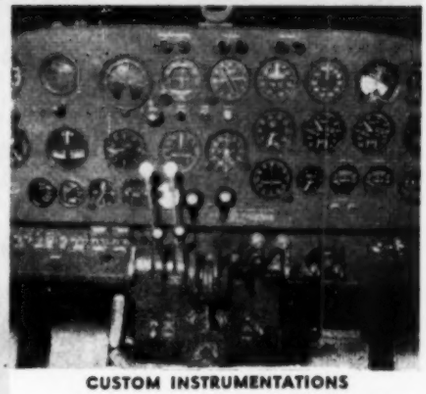

ACCESSORIES

WE ARE INTERESTED IN YOUR AIRCRAFT PROBLEMS


CUSTOM RADIO INSTALLATIONS

STORAGE

Your aircraft problems are of vital importance to us. Each appointment in your airplane should conform to your individual needs and specifications. We invite you to confer with the J. D. Reed Company engineering staff. We will solve your problems in the least time and most economical manner possible.

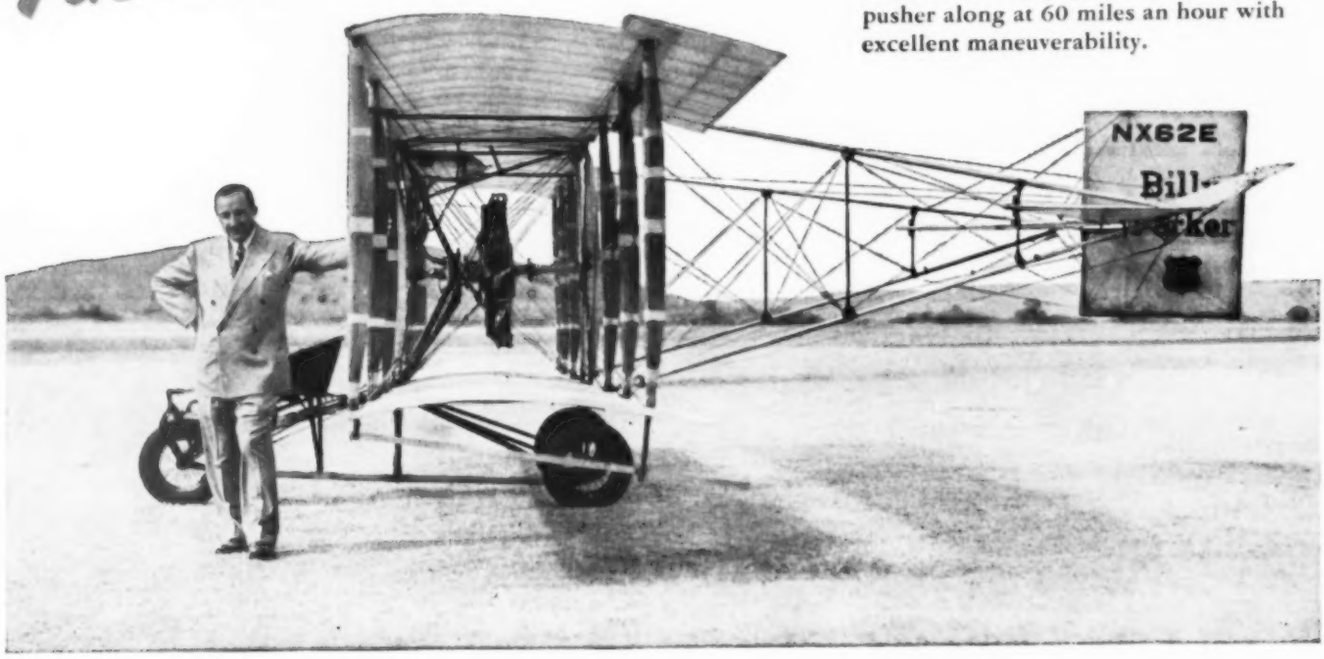

CUSTOM INSTRUMENTATIONS

The service, maintenance and overhaul facilities of the J. D. Reed Company are the most extensive and complete available anywhere. Years of technical aeronautical experience has equipped this shop to handle every job, regardless of size.

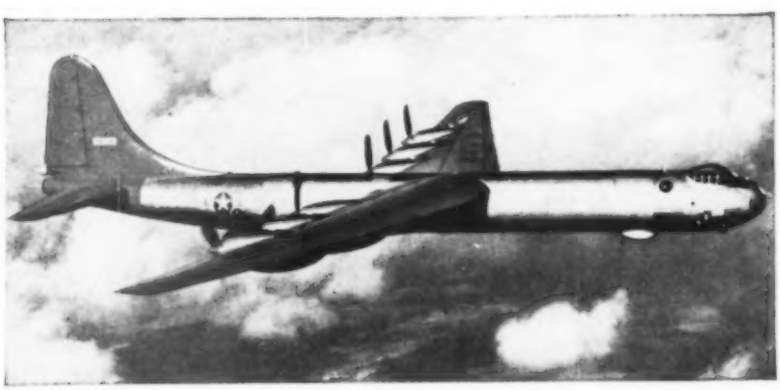
J.D. REED CO., Inc.
SALES SERVICE
Beechcraft
DISTRIBUTOR
MUNICIPAL AIRPORT
HOUSTON, TEXAS

Pusher-1912 VERSION

Low and slow is how she goes when Billy Parker cranks up the old Gnome Rotary engine in his 39 year old pusher plane. Clear, unleaded gasoline sprays through the stationary crankshaft into the 7 rotating cylinders then exhausts through the single valve in the cylinder heads. The bulky propeller urges the pusher along at 60 miles an hour with excellent maneuverability.



Pusher-1951 VERSION



High, wide and handsome is the intercontinental pace of the B-36. Its tricycle landing gear and pusher propellers clearly stem from early aircraft. But there the resemblance ends.

On each B-36 mission, its six 28 cylinder engines drink up to 21,000 gallons of 115/145 grade gasoline. Millions of barrels of this top grade aviation fuel have been supplied to military and commercial customers by Phillips Petroleum Company.

When you want dependable aviation products for today's piston engines or tomorrow's turbo-props and jets, think first of Phillips. The Aviation Department, Phillips Petroleum Company, Bartlesville, Oklahoma.

Phillips 66

AVIATION PRODUCTS

LIGHTPLANE INDUSTRY LEADERS AND GOVERNMENT OFFICIALS discussed defense needs last month in Washington. Left to right around the table are W. T. Piper, the manufacturer; Carl F. B. Roth, Aircooled Motors president; Joe Geuting, Jr., AIA Personal Aircraft Council manager; CAA Administrator Don Nyrop; Charles C. Cary, Air Coordinating Committee secretary; M. L. Frank and A. C. Ryan of Bellanca; R. J. Cowden. L. H. Cample and Don Waltz of Lycoming; Ray Hermes of Aeronca; Jack Reese, Continental Motors president; Dwane L. Wallace, Cessna president; Don Mockler, AIA; and Lynn Richardson, Beech.
—(AIA Photo.)

AIR Report
Significant Trends and News

OFF TO A LATE START, aircraft production expansion has been accelerated by year-end contracts including one to Kaiser-Frazer for quantity production of the Fairchild C-119 at Willow Run, where autos are now produced. Contract had been expected by Fairchild, for production of C-119 at former Bell bomber factory at Marietta, Georgia, but political pressure shoved Fairchild aside to give Kaiser-Frazer preference. . . . More auto firms will get aircraft contracts, including General Motors. . . . Boeing B-47 Stratojet is hottest project at present and will be produced at Tulsa, Oklahoma, as well as in Wichita, Kansas. . . . Air Force will now aim for more than 84 groups, the goal until recently.

FIVE CIVILIAN CONTRACT SCHOOLS for USAF pilot training at military bases will be selected in first round of preparations. Contractor for Greenville, Mississippi, base will be named shortly. More technical training contracts will also be issued to civilian schools.

LATEST LIGHTPLANE DROPPED FROM PRODUCTION IS CESSNA 140, materials for which will go into Cessna 170 and 190 production. Don Flower of Cessna says firm will offer improved version when 2-pl. 140 output is resumed following temporary suspension. . . . **PIPER OUTPUT OF 6 PLANES DAILY** was to be resumed in December, with 650 engines scheduled for delivery by June and an order of 1,000 engines to be delivered be-

(Continued on page 32)

FLIGHT MAGAZINE
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JANUARY, 1951 VOL. 35, No. 1

COVER: First flight view of production model Aero Commander 520, now in production at Oklahoma City. Five-place craft is powered by two 260-hp. Lycomings, is said to have cruising speed of more than 190 mph., and is being demonstrated to military forces. Prototype model with 190-hp. Lycomings was issued CAA Approved Type Certificate No. 6 A1 last Summer.
—(Aero Design Photo.)

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GEORGE E. HADDAWAY, Editor-Publisher; TOM ASHLEY, Managing Editor; FRED N. STONES, JR., Business Manager; E. H. PICKERING, Research; L. M. ROBERTSON, Circulation Manager. *West Coast Representatives,* TED SCHELL and STAN BROWN, 1200 Rives-Strong Bldg., Tel. Vandike 8921, Los Angeles.

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THE BRAND NEW AERO DESIGN Commander

IT'S COMING YOUR WAY... AND RIGHT ON TIME!

The Aero Commander, new twin-engine plane for the business man, has gone into production. Designed to fill the long recognized needs of the busy executive, the brand new Aero Commander will be available on the commercial market this summer.

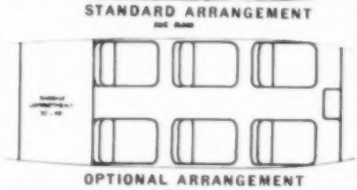
Presenting an entirely new theme of perfection in the executive type airplane, the Aero Commander provides 200-mile-an-hour travel in luxurious comfort at an economical cost. It will make it possible for businessmen to meet out-of-town appointments in minimum time, free of the fatigue of ordinary travel, and at a cost that will be absorbed in its own savings.

The Aero Commander combines twin-engine safety with a simplicity of operation that will encourage many business executives to fly the plane themselves. The business executive needs the Aero Commander in his business.

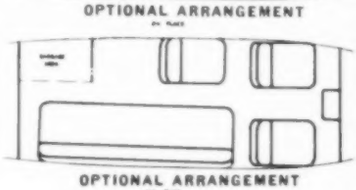
Complete details can be obtained by writing Aero Design and Engineering Company, Tulakes Airport, Oklahoma City

CABIN ARRANGEMENTS

STANDARD ARRANGEMENT



OPTIONAL ARRANGEMENT

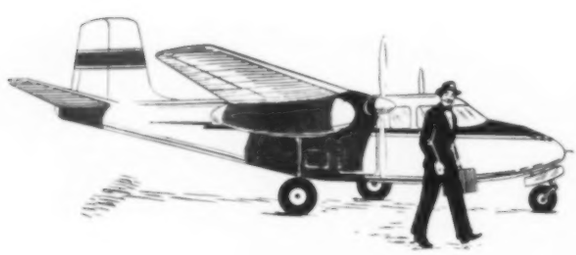


OPTIONAL ARRANGEMENT

Model 520

Range Normal with 30 Min. Reserve	690 MI.
High Speed Rated Power S.L.	200 MPH
Cruising speed 75% S.L. Power	183 MPH
Cruising Speed 70% S.L. Power @ 10,000 Ft.	197 MPH
Rate of Climb, Two Engine @ T.O. Power S.L.	1,872 FPM
Rate of Climb, Single Engine	460 FPM
Service Ceiling, Two Engine	22,900 FT.
Service Ceiling, Single Engine Feathered Prop.	10,500 FT.
Takeoff Distance Over 50 Ft. Obstacle	1,025 FT.
Stall Speed, Full-Flaps	57 MPH
Power Plant	Lycoming GO-435-C2
Normal Rated Power	240 @ 3000 RPM Prop 1925

*All performance is based on T.O. Gross Weight of 4800 lbs.



AERO

DESIGN & ENGINEERING CO.

N. W. 50 and WEST AVE.
Phone 99-3700
OKLAHOMA CITY, OKLA.
Tulakes Airport

FLIGHT MAGAZINE, January, 1951, Vol. 35, No. 1. Published monthly. Publication office, P. O. Box 750 (1901 McKinney Ave.), Dallas 1, Texas. Price 35c single copy. Subscription rates: United States, one year $3.00; two years, $4.00; three years, $5.00. Established February, 1934. Entered as second-class matter at the Post Office, Dallas, under the act of March 3, 1879. Copyright, 1951, by Air Review Publishing Corporation.

Just among ourselves

EDITORIALS

THE NATIONAL EMERGENCY AND AVIATION

OF all the basic U. S. industries now gearing for total war, the aviation industry certainly is the least surprised that the President has at last declared a state of national emergency. All of the intelligent and patriotic pleadings during the past five years, indelibly inscribed on the record for all to see and understand, went unheeded. The aviation industry's only bewilderment now is over the tragic lateness of the hour and more especially over the question, "how can we expand to the ultimate before the clock runs out?"

All of us realize there's no time for recapitulation of errors or for crying in one's beer over the years eaten up by politics-as-usual, bankrupt statesmanship and weak military leadership, a combination of tragic circumstances which has brought the United States to what might well be the worst military defeat in our history and to the very brink of national disaster. Perhaps this grim realization of actual fact will prove to be the impetus we need to accomplish in a few short months what we wanted years to accomplish in air defense preparedness.

Insofar as aviation is concerned, our greatest single asset may be chalked up as the experience industry leadership gained in World War II, when aviation was catapulted overnight from almost nothing into the greatest industrial effort in the history of the human race. Although this vital know-how will be spread thinly again, it remains a national asset that can't be purchased or recreated quickly at any price. We can depend upon it to avoid many costly mistakes learned the hard way in World War II.

There is one more area in which we can take heart. We've been through the postwar wring-out and have emerged 8 to 10 times larger than in the pre-Pearl Harbor days of 1941. That gives us a broader, more substantial base upon which to superimpose the terrific expansion now called for by all-out mobilization. The aviation industry is mentally and physically conditioned for the task ahead.

Creation of the Office of Defense Mobilization under Charles E. Wilson, with full and unprecedented powers over production, procurement, manpower, transportation and economic stabilization, will no doubt emerge as the most important single action in the life-and-death struggle against time. Charles E. Wilson, who has served actively and well as chairman of the board of the National Air Council, is definitely and unequivocably in the air power column. There is every reason to believe that competent aviation industry leaders will be called in to serve at high-echelon level with him, thereby providing the real keystone in the immediate reconstruction of U. S. strategic air power and the preservation and strengthening of all civil aviation components which are ready now for all the jobs they will be called upon to handle—transport, training, production, contract maintenance or the many civil defense tasks.

World War III, declared or undeclared, is now going on. All talk of the "coming war" is pure poppycock. The brave men dying today in the frigid Korean sink-hole have no ears for the silly patter at Lake Success and in certain quarters around Washington about the possibilities of avoiding war with the Communist hordes. We can appropriate billions of dollars but not one extra hour on the clock. The overwhelming power and force we can and must create is now the only successful way out. The American aviation industry is the principal sinew of that power. On its shoulders and upon those who direct its destinies in the next few months rests the heaviest responsibility ever to fall on any single group of men in our nation's history.

WALTER BEECH

WE knew Walter Beech long enough and well enough to be quite sure that when the time came for him to take the long flight West, as it did last month, he wouldn't want any sob-sister comments from the passing throng. We want to remember him as we last saw him—puffing away at his crooked-stem pipe, right in the middle of a hangar-flying session with a bunch of old friends. He departed this world at the peak of a successful career—and happy. Few oldtimers in the business have had that rare blessing.

Walter Beech is assured a top place in aviation's Hall of Fame, not only as a pioneer airman with many enviable "firsts" to his credit, but also as an engineering, design and production genius, and one of the very few men of his era to enjoy financial success making airplanes primarily for the commercial market. Perhaps the principal element in his success, outside his brilliant, helpful wife, his personal drive and practical aeronautical knowledge and skill, was his unswerving conviction that aviation was primarily an engineering business—not one of production. The outstanding Beechcrafts flying the skyways of the world today bear testimony to that fact.

Though the loss to the industry and his company is great, his contributions to the art and science of flight will go on.

WHAT EVERY BANKER SHOULD KNOW

THERE are several thousand relatively small aviation business men on several thousand private, commercial and municipal airports throughout every nook and cranny of the nation. Some people call them flight operators, others call them fixed-base operators, some call them

(Continued on page 46)

great names WITH ONE OBJECTIVE

great names, great products and great services . . . .

The CERTIFIED BEECHCRAFT SERVICE sign means many greats rolled into one. The distinguished firms displaying this sign have established their reputation over many years through outstanding products and service.

These great names warrant your confidence in products and services offered.

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Oklahoma City, Oklahoma

Alamo Aviation, Inc.
Municipal Airport
San Antonio, Texas

Amarillo Aircraft
Tradewind Airport
Amarillo, Texas

Anderson Air Activities
General Mitchell Field
Milwaukee, Wisc.

Truax Field
Madison, Wisc.

Atlantic Aviation Service
New Castle County Airport
Wilmington, Delaware

Atlantic Aviation Corp.
Teterboro Airport
(25 minutes from Times Square)
Teterboro, New Jersey

Butler Co., Aviation Division
Municipal Airport
Chicago, Ill.

Francis Aviation
Capitol City Airport
Lansing, Michigan

Gray Aircraft Svc. Co., Inc.
D. A. Cody, Service Mgr.
Love Field, Dallas, Texas

Harte Flying Service
Municipal Airport
Wichita, Kansas

Hunter Flying Service, Inc.
Hunter Field
Cedar Rapids, Iowa

Ohio Aviation Company
Dayton Municipal Airport
Vandalia, Ohio

J. D. Reed Co., Inc.
Municipal Airport
Houston, Texas

Roscoe Turner Aeronautical Corp.
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Certified

Beechcraft

Service

Again in '50!

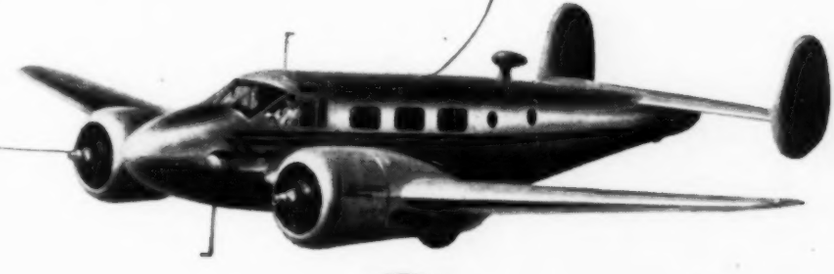
The sales leader in its class Beechcraft Bonanza

This revolutionary 4-place plane has set records all over the world—for fast, versatile performance, for remarkable operating economy. For comfort—and for *safety*—far beyond CAA standards. So *sales* records, too, have just "come naturally." Today the Model B35 Bonanza is helping to set a new, faster pace in almost every field of American business. For more facts on the Bonanza, contact your Beechcraft distributor today, or write Beech Aircraft Corporation, Wichita, Kansas, U. S. A.

Top speed, 184 mph
Cruising speed, 170 mph
Range, 750 miles
Fuel economy, 9.5 gph

The Beechcraft Executive Transport

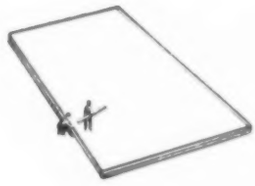
Familiar sight on all the world's airports. This twin-engined Model D18S carries seven to nine in luxurious comfort; cruises at 200 mph. It's the ultimate in air transportation.



Beechcraft

BEECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS

Builders of a New Era of Flight



. . . Our Customers

Instead of patting ourselves on the back, we're happy to give credit where it is due—to our Customers. It's their patronage of aviation and faith in us that has brought us up through the ranks. As we move into our new Love Field headquarters at the beginning of a New New Year, we're naturally proud of our progress and growth during the Old Year.

Leaders in an age of great development—that's our Customers.

Let no one overlook their importance. Our Customers are flying business men from all America and beyond our borders. Their demand for quality, performance and reliability is making private air transportation more practical, more useful, more essential than ever. Without this demand, there would be no need for a lot of aviation activity we could mention, including our new Love Field headquarters . . . including, too, some remarkable aircraft radio progress in which we specialize.

Pacemakers of Air Progress—that's our Customers.

Thanks, then, to YOU, our Customers, as we begin the New Year better equipped than ever to contribute to progressive air transportation.

—Carl, Tony, Lee and the Staff of Associated Radio

Associated Radio

CARL FOX
TONY AGUILAR
LEE LANFORD

LOVE FIELD • DALLAS

Distributors for

★ COLLINS ★ LEAR

Dealers for

★ ARC ★ BENDIX

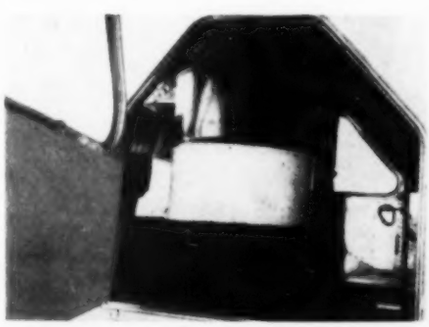
★ VHF AVIGATOR

The DeHavilland Beaver

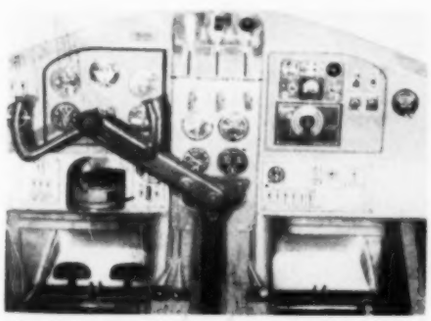
FOR YOUR TOUGHEST JOBS

Designed with versatility and pay load in mind

Passenger version has luxurious and comfortable appointments, with ample dimensions, of 150 cubic feet, as either 4, 5, 6 or 7 place aircraft.



Freight loading is facilitated by cabin doors built flush with floor and hatch in rear wall for long pieces of freight.



Flight instruments are grouped on a standard and blind flying panel. Throttle, pitch and mixture controls centrally located. Wheel is throw-over type with dual rudder pedals.

Sturdy construction and rugged dependability

The Beaver is designed to survive continuous hard use under the most strenuous operating conditions. It is built to withstand severe exposure in the open with a minimum of service and maintenance.

From the bitter cold forests of the Canadian bush to the steaming hot jungles of South America the DeHavilland BEAVER meets the aircraft operator's every requirement 100 per cent.

The Babb Company is also proud to announce the availability of the new Beaver Sprayer. Canadian operators have replaced four to five smaller airplanes and crews, using one Beaver with its 240 gallon spray tank. This economy means many dollars in profit to the operator.

BEAVER performance spells "UTILITY"

	Landplane	Seap'ane
Gross Weight	4,650 lbs.	4,820 lbs.
Max. Sp. 5,000 ft.	179 mph.	160 mph.
Cr. Sp. 5,000 ft.	153 mph.	137.5 mph.
Max. Cl. Sea Level	1,290 fpm.	1,200 fpm.
Range (Gross Load)	578 miles	510 miles
and Payload (Max. Range)	1,140 lbs.	1,000 lbs.

A Southern Transcontinental Demonstration Flight will be made early in February demonstrating a semi-deluxe seven-place version of the BEAVER executive transport. Write or wire for demonstration schedule and appointments.

THE BABB COMPANY, INC.

Hangar No. 8
Newark Airport
Newark 5
New Jersey

Phone: Market 3-7282

We're Short in Air Lift for War

WHAT RUSSIA FEARS MOST

WE LACK SUPERIOR AIR TRANSPORT

OUR VITAL NEED IS AIR FREIGHT

FLEETS UNHAMPERED BY SUBSIDY

OR BUILT-IN MILITARY DEAD WEIGHT

HERE we go again!

In spite of the object lessons gained in two wars and a relatively long inter-war period, we find ourselves again without air transport adequate to the situation.

Little is to be gained by wringing our hands and castigating those responsible for this situation.

Our present predicament is almost a carbon copy of that of a decade ago. Then the "fanatics" were as voices crying in a military wilderness for bombardment aircraft capable of fighting their way through to an objective with or without fighter support, in broad daylight. Six long years it took to fill that vacuum and smash our enemy to the ground!

And yet here we are again, facing a similar situation without another means vital to our survival. This time the lack is not of an offensive weapon. We have that par-excellence — the trouble is we appear to be too timid to use it.

This time our need is for plain ordinary aerial hod-carriers—*aircraft designed and built primarily for economical utilization in commerce, unhandicapped by built-in military dead weight.*

Why?

For the simple reason that we have another enemy requiring different treatment.

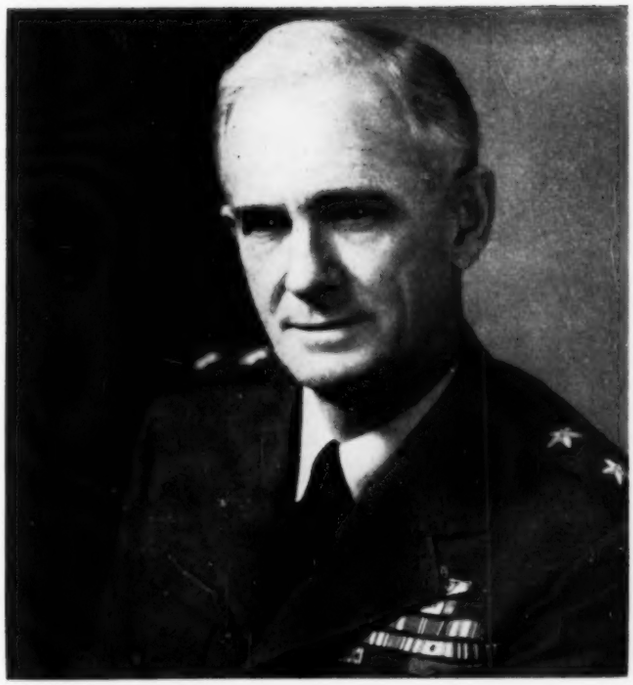
Previously our enemy has been industrially competent. He could produce tools of war as good as, and in some cases better than, we could.

We licked him *because we were smart enough to make better tactical and strategic use of the same weapons.* In other words we utilized the same types of aircraft to better advantage.

This time we have an enemy possessing vast

By
MAJ. GEN.
HUGH J. KNERR
(USAF Ret.)

r Emergencies



FLIGHT MAGAZINE proudly inaugurates with this article a regular series by Maj. Gen. Hugh J. Knerr (USAF Retired), widely respected for his prominent role in development of U. S. air power. Brilliant air strategist and thinker, he now lives in retirement in Maryland after a long career which began with his 1908 graduation from the U. S. Naval Academy. Transferring to the Army in 1912 in quest of an aviatior's rating, he received flight training in 1917. As Chief of Staff of the GHQ Air Force, he was a key factor in guiding its establishment and experimentation which resulted in the development of the B-17 and strategic air power. These were lean years for air power and its champions, whose struggle barely succeeded against prejudices, obstructionist tactics and ignorance of air power and how to utilize it. No man more than General Knerr knows the inside story of that fight which brought the U. S. air supremacy. In 1942 after brief retirement because of physical disability, he served as Department Commander, HQ, Air Service Command, and in 1944 he became Commanding General, HQ, Air Service Command, U. S. Strategic Air Forces in Europe, returning in 1945 to the former command and being appointed Inspector General of the U. S. Air Force in 1948.

resources in manpower but very limited resources in industrial power.

This enemy fears only two things—the atom bomb and our industrial capacity.

He fears the atom bomb *because he does not have one—not even one GI complete with spare parts*—in the opinion of some of us.

He fears our industrial capacity because he has seen it lick another industrial giant, not once but twice.

NOW it should be obvious to anyone that the vital element in our industrial competence is communications. All kinds of communications—land, sea and air. Railroads, highways, airways, radio, telegraph, etc. In short, the nerve system of integrated industry.

Few people realize that *in this regard Russia is a pygmy*. For example, if this country were the same size as Russia, we would have a paved highway network of five million miles to compare with her 17,000. Thousands that is! Or, if you tore up all but 10% of our railroads, we would have the same track coverage. Telephones, telegraph, radio, airways—all bottlenecked through Moscow to be sure the Comrades understand the proper interpretation of their 180 different languages and dialects.

And so on for all the other means of rapid communication, *with the exception of air transport*. And right there you put your finger on our sore spot—our Achilles Heel. *We simply do not have a comparable facility.*

Don't let anyone tell you that a few hundred luxury passenger planes frantically converted to military usage constitutes air transport in the same sense that the thousands of Russian cargo carriers do.

Not only is conversion of passenger craft to freight purposes stupid utilization of aircraft, it is frightful dissipation of man-hours when both men and hours are in short supply and a senseless self-imposed handicap on our industrial nerve system when full capacity is vitally needed.

What we should do, without further delay, is set about filling our deficiency in mass air lift. This can be done in simple fashion by devoting a realistic effort to the creation of a self-supporting, subsidy-free air freight industry. Only then, when emergencies arise, will we have in being air lift adequate to military requirements.

So long as we persist in maintaining the restrictive position of subsidy-supported passenger carriers to the exclusion of freighters operating on street-car schedules, we deliberately handicap ourselves in the face of a faceless enemy. ★ ★ ★

Why Wait? Civil Aviation Must M

Here's an immediate plan for local civil air defense mobilization per

By GEORGE E. HADDAWAY

IN spite of all the lessons learned and experiences gained by civilian airmen in World War II, civil air defense organization is moving at a snail's pace with the exception of a few states lying in highly sensitive areas where state aviation officials have taken the initiative to implement the basic principles of air defense planning as outlined in the Aviation Development Advisory Committee Report entitled "America's Civil Air Power," released August 28, 1950. Why this should be so at a time of national peril, when every citizen understands just how vulnerable we are to enemy attack, is difficult to understand. But rather than to get involved in an academic argument, the practical approach should be: "Let's do something about it!"

Last month we published the "California Plan," the first state civil air defense plan to be completed. Reference to this plan, which stemmed from the ADAC report, reveals anticipation of the national emergency which has since been declared. There is no doubt now but that both Federal and State authorities will stop fooling around and get down to the serious business of giving *all* airmen *everywhere* an official peg upon which to hang their civil air defense hat.

EAC Proposal

Coincident with the declaration of the national emergency by President Truman, the Emergency Aviation Council, comprising thirteen active aviation trade associations, met in Washington and prepared a new version of the California plan, the major differences being provision for the establishment of a communication network, and the designation of a CAA liaison agent in each state. The proposed EAC organizational chart is reproduced with this article.

Under emergency conditions, the EAC plan incorporates under "Communications" the following: "In the event of the existence of disaster conditions, and upon receipt of a request from appropriate military or civil authority for the assistance of civil aircraft owners, pilots, and other aviation personnel, for disaster relief, the Civil Aeronautics Administration communications system and all other available means of communications shall be utilized to the fullest extent by competent authority in the widespread dissemination of such request." For limited emergency, the EAC calls for a communications network which will provide for the dissemination of necessary directives and pertinent information to airports by the following means in addition to normal means when required:

1. Civil Defense Chain of Command medium.
2. CAA Communications system.
3. Emergency communications net as developed by the Federal Communications Commission and the related industry.
4. Civil Air Patrol communications net.

Why Wait?

There's no doubt now but that this or some similar state plan will be adopted as the "official" plan, recommended or required by the Federal Civil Defense Administration just getting organized in Washington under

STATE ORGANIZATIONAL CHART for civil aviation in defense has been prepared by the Emergency Aviation Council.

*An area organization may be established in addition to or in lieu of local organization. **Or similar political or civil defense subdivision.

st. Mobilize Now

tion pending national developments

Civil Aviation's Essentiality to Defense

MERRIL C. (Babe) Meigs, acting chairman, executive board of managers, National Air Council, sent the following wire last month to top brass in Washington:

"Believing that current critical shortage of parts and materials for civil aviation constitutes threat to entire military effort, the executive board of managers of the National Air Council in recent meeting unanimously authorized the following statement quote resolved that all categories of civil aviation are essential to national defense and to the productive and transport capacity of the United States and that their long-range requirements should be assured, in conformity with national mobilization plans unquote. In advising of this action I wish to express National Air Council's earnest hope that an adequate long-range civil aviation program may soon be formulated by agencies involved."

The wire was sent to the Administrator, National Production Authority; Secretary of Commerce; Chairman, Munitions Board; Chairman, National Security Resources Board; Chairman, Civil Aeronautics Board; Administrator, Civil Aeronautics Administration; Under Secretary of the Navy, and Under Secretary of the Air Force. Charles E. Wilson, former NAC chairman, will head up the new and all-powerful Office of Defense Mobilization. ★ ★ ★

the direction of ex-Florida Governor Millard Caldwell, Jr. But we maintain a lot can be done right now before all this machinery is set in motion. Since the real life blood of any civil air defense plan is going to be the local airport, the local operator, airplane owner and pilot, why not start there NOW with a nucleus organization, ready to go no matter what kind of national or state plans are finally perfected? This proposal is for those states and localities where nothing exists and where there's little hope of immediate organization at the grass roots.

We submit that if there is no established program in your immediate area of interest, you can join with others (airport managers, operators, airplane owners, pilots, etc.) and get going NOW by following these simple steps:

1. Call a meeting at once of all active aircraft owners and certificated airmen whose activities center around your hangar or airport, no matter how small it is or how few airmen are available. Explain the urgency of the present situation, especially in case of emergencies arising before national plans are perfected.

2. Elect an acting unit director who will register all members of the group on an Air Mobilization Card, containing full name, address, day and night phone numbers, type of licenses and special ratings, total flight time (day, night and instrument) and all pertinent information regarding airplane, two-way radio equipment, etc. Unit Director will have responsibility of keeping the card file up to date, enrolling new members and supervising activities until a permanent unit is formed and coordinated into state and national plan. Investigate possibilities of affiliating with Civil Air Patrol.

3. Arrange regular meetings at which local unit activities will be planned, including disaster practice missions in co-operation with local civil defense agencies, Red Cross, police, fire departments and the working press.

4. Arrange night study courses for all members of the Unit in order to strengthen airmanship and civil defense indoctrination. Brush-up courses in all basic aviation subjects, cross-country flying, radio and flight plan procedures, search and rescue missions. Encourage all active pilots to keep medical certificates current, to apply for FCC radiotelephone licenses, keep aircraft in flyable condition at all times. Encourage installation and use of two-way radio equipment. Keep all members thoroughly informed on all security control measures, including the "control airport" proposal, forthcoming I. D. card requirements and complete familiarity with all restricted, prohibited and "sensitive" areas where flight should be avoided.

5. Provide complete inventory to local civil defense directors, with copy of your card file giving information on planes, airmen and facilities, together with a simple outline as to how these resources can be mobilized quickly and efficiently. Determine at once with the assistance of your local defense councils the types of missions likely to be needed in your particular area and indoctrinate your local defense unit members in these specific jobs. Establish and maintain constant liaison with local or district CAA offices through CAA agents for coordination on area basis with other civil air defense task units, as well as state agencies as they are established.

6. Plan to equip and guard your airfield so that armed guards with police power can take over at once if and when needed. Deny access to facilities and planes to unknown or suspicious characters. Although an automobile, bicycle or bow and arrow can be used as effectively as an airplane by people bent on sabotage, the general public doesn't think so, thereby putting us on the spot. Actually, a nationally organized group of small planes can help prevent sabotage.

Initiative the Key

Your community should be made to realize that the nation's lightplane fleet may be the only mobile force for civilian aid in case of enemy attack. If U. S. civil airmen will use initiative, imagination and common sense and keep themselves organized on a ready-to-go basis in every community, not only will patriotic services be performed but civilian aviation can grow and prosper rather than be restricted or abandoned. Increased flight activity should result.

As a general rule most civilian airmen are less complacent about the present danger than other specialized groups of our citizenry. That's why local civil air defense units can be formed now, even without official guidance and direction or co-ordinated state and national plans. So why wait for the top brass to decide what to do? A realistic grass-roots civil air defense program will help keep many airports

(Continued on page 45)

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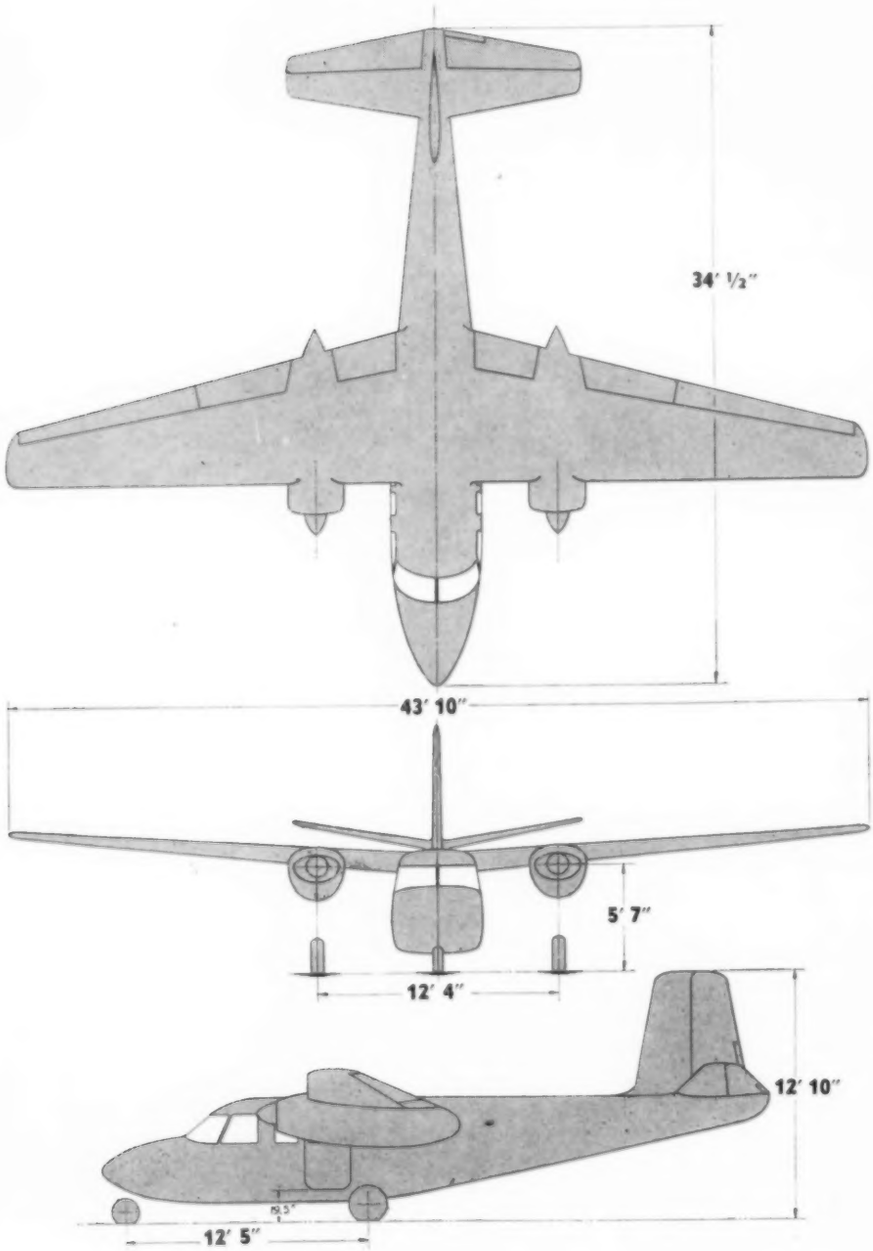
Performance Aplenty

Choice of four models promised in newly-launched Aero Commander production



A NEW star in the light-twin aircraft category is going into production, with first commercial deliveries scheduled for mid-Summer and with engines and other necessary materials on hand or available for initial orders. It is the 5-place, high-wing, all-metal Aero Commander and its manufacturer is the newly-organized Aero Design and Engineering Co., Tulakes Airport, Oklahoma City.

The prototype Commander was issued airworthiness Approved Type Certificate No. 6 A1 recently by the Civil Aeronautics Administration. It was the Model 380, powered by two 190-hp. Lycoming engines. But the production model has been equipped with two GO-435-C2 Lycomings rated at 260 hp. each for take-off and 240 hp. each for continuous operation. It is Model 520.

Model 520 is flying and is, in fact, being demonstrated to military officials, having been entered in the current design competition at Wright Field for liaison aircraft for the ground forces.

Two other models are to be offered. One is Model 450, equipped with 225-hp. Continental E-225-8 engines, and the other is Model 600, equipped with

High wing, low cabin floor, and clean lines distinguish basic Aero Commander design. Note Douglas influence.

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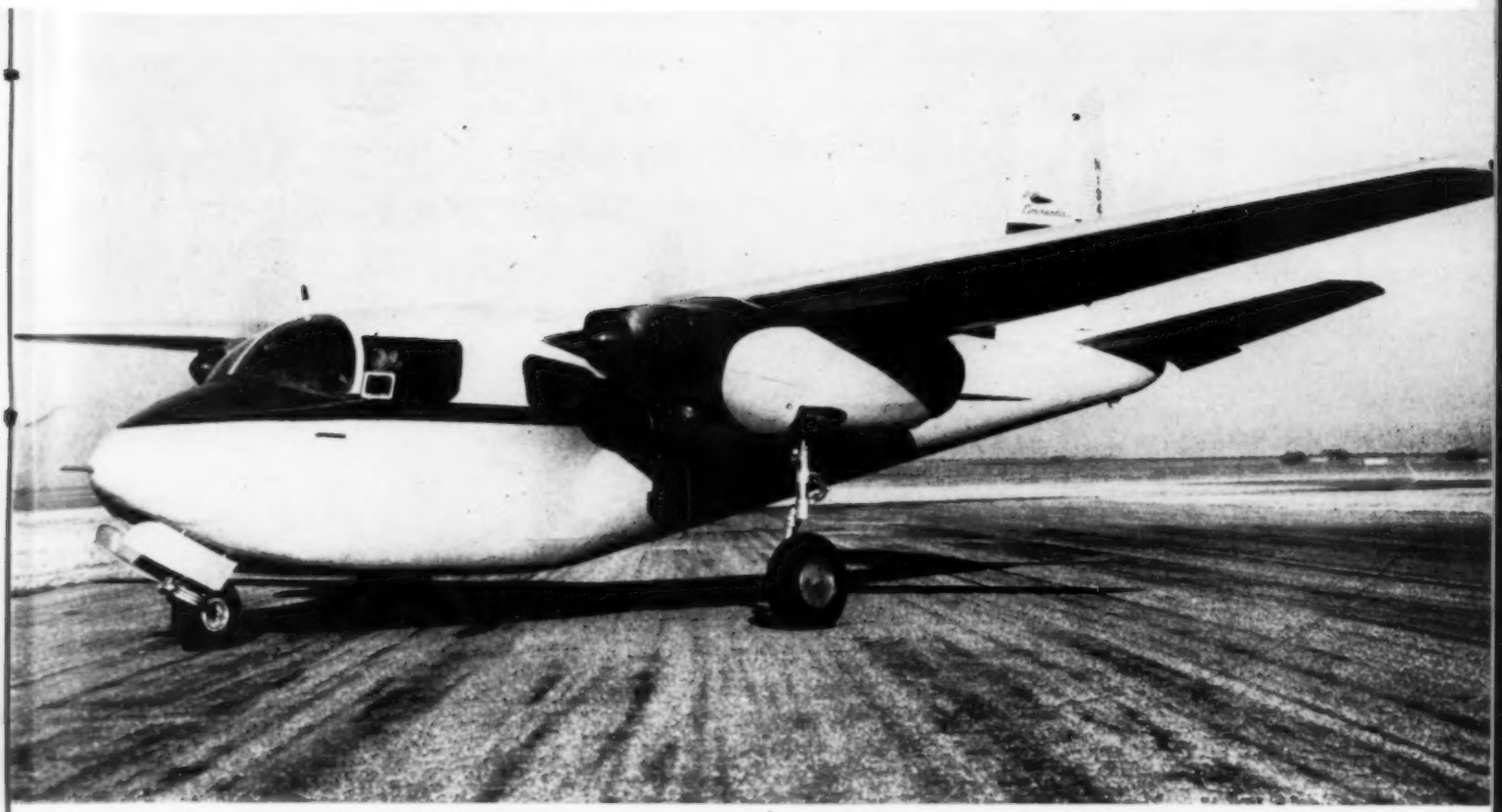


First photo of production model Aero Commander, which features two 260-hp. Lycomings instead of 190's which powered prototype to which CAA awarded ATC No. 6 A1. Million-dollar Oklahoma City firm has started manufacture of Aero Commander.
—(Aero Design Photo.)

two GSO-435-C2 engines having superchargers and rated at 300 hp. for take-off and for 240-hp. normal rating at 8,000 ft.

While all four versions offer impressive light-twin performance, the Model 600 is the star performer in the Aero Commander line. Among other things, it offers such unprecedented light-twin performance as (a) single-engine rate-of-climb of 810 fpm. with constant-speed propellers and with one propeller windmilling; (b) single-engine service ceiling of 12,500 ft. with one propeller windmilling, and (c) take-off distance over 50-ft. obstacle in zero wind of only 800 ft.

That, if the new firm's claims prove acceptable when Model 600 is not only in production but is being flown by private owners, makes the Aero Commander most promising, indeed. There is need for high-performance light twins and wide interest in them for private-commercial, small airline and military applications.

All four models use the same basic airframe which was CAA-approved with 190-hp. engines. Gross weight for each is given at 4,600 lbs. Cruising speeds at 10,000 ft., using 70 per cent of rated horsepower at sea level, are given as being 175 mph. for the Model 380, 188 for the Model 450, 198 for the Model 520 and 202 mph. for Model 600. Other data is compiled for convenient reference in the accompanying tabulation.

In $40,000 Category

No price tag had been affixed to the Aero Commander line as we went to press, but the figure which seems to be mentioned most frequently in discussions is $40,000. This is for Model 520,

AERO COMMANDER

Specifications and Performance

From Aero Design and Engineering Co., Tulakes Airport, Oklahoma City, Okla.

	Model 380	Model 520	Model 600
Power Plant (2 Lyc.)	O-435-A	GO-435-C2	GSO-435-C2*
Normal Rated Power, hp.	190	240	240
TO hp., 5-min. rating		260	300
Gross Weight, lbs.	4,600	4,600	4,600
Empty Weight, lbs.**	2,866	2,899	2,955
Useful Load, lbs.	1,734	1,701	1,645
Baggage max. allowable, lbs.	286	133	77
Fuel Capacity, gals.	100	120	120
Wing Area, sq. ft.	242	242	242
Wing Loading, lbs./sq. ft.	19	19	19
Power Loading, lbs./hp.	12.11	8.85	7.66
Max. Speed at Rated Power @ Sea Level mph.	185	200	210
Cr. Speed at 70% SL Power @ 10,000 ft., mph.	175	198	202
Range Normal with 45-min. Reserve, miles	680	850	850
Stall Speed, gear and flaps extended, Power off, mph.	56	56	56
Stall Speed, gear and flaps extended, Power on, mph.	40	40	40
Stall Speed, gear and flaps retracted, Power on, mph.	62	62	62
TO Distance over 50-ft. obstacle, ft.	1,383	950	800
Rate of Climb, two engines, sea level, fpm.	1,297	2,012	2,362
Rate of Climb, single engine, sea level, fpm.†	240	600	810
Service Ceiling, two engines, ft.	22,100	24,000	28,000
Service Ceiling, single engine, ft.‡	5,000	8,700	12,500

Notes: Performance is for sea level, zero wind, gross weight, standard air unless otherwise noted. *Supercharged, 240 hp. @ 8000 ft. **Empty weight includes Hartzell constant-speed (metal) propellers; VHF radio; AN quality instruments including all gyros; flap and wheel position indicator; air conditioning system with heater; landing and navigation lights; passenger seat for three 53 ins. wide; adjustable pilot and co-pilot seats. †For constant-speed propellers. ‡For constant-speed propellers; with feathering propellers, service ceiling on one engine is specified at 7,000 ft. for Model 380; 11,000 ft. for Model 520, and 15,000 ft. for Model 600.

The Long and Short of Horsepower Mobilization

THE man in the picture is H. M. (Jack) Horner, United Aircraft Corporation president. Those aluminum rods he has before him represent the U. S. aircraft engine industry's military engine productivity at various stages of mobilization. Here's how it stacks up, expressed by the length of the rods:

Shortest rod, or No. 1, represents the engine industry's annual rate of production based on the last available figures before such information became restricted—its length corresponds to 4,400 engines per year as of the first half 1948. Assuming that this shortest rod also represents engine production as of mid-1950 just before increased orders were issued for rearmament, the next longest rod, or No. 2, represents maximum engine output attainable at the end of the first year of expansion. No. 3 is maximum output attainable at the end of the second year. No. 4 represents maximum

aircraft engine production for 1944, World War II peak output.

"The first three rods represent all the engines we can get in the first two years of an all-out emergency, not in just a limited go-ahead," Horner explains. "The industry could, if ordered, bring in satellite plants and licensees, but they can't produce anything in the first two years and shouldn't be expected to—they couldn't in the last war. In the third year of all-out effort, this industry could do anything it was ordered to do, depending on the economy of the country."

Rod No. 4, he said, can be considered as "doing anything we want to do" with the rate of engine output in the third year of all-out expansion. It is 57 times as long as Rod No. 1, representing over 256,000 aircraft engines per year. But Rod No. 3 is only 7 times as long as Rod No. 1 and Rod No. 2 is only 3 times as long as the shortest.

(Ed. Note: United Aircraft's Pratt & Whitney Division began accelerating engine output in August, is now bringing into operation a huge East Coast satellite plant, and Ford Motor Co., is inaugurating licensed Pratt & Whitney aircraft engine production in a huge Chicago standby factory.)

with the unsupercharged GO-435-C2 engines; constant-speed Hartzell metal propellers; VHF radio, AN quality instruments including all gyros; flap and wheel position indicator; air-conditioning system with heater; Dynacone engine suspension; adjustable pilot and co-pilot seats and 53-in.-wide rear seat for three and landing and navigation lights. This equipment is also included in the airplane's empty weight of 2,899 lbs., on which is figured a useful load of 1,701 lbs. with its 4,600-lb. gross weight.

This is quite light for a twin having the performance claimed by the Aero Commander. It represents, for example, considerable structual achievement by its designers and engineers, and it results in a low wing loading of 19 lbs. per sq. ft., and a very low power loading of only 8.5 lbs. per hp. Here is the key to the Aero Commander's high performance, along with aerodynamic cleanness.

Placard speeds are: Level flight, 200 mph.; gliding, 270 mph., flap speed, 120 mph., and gear speed, 120 mph. Limit load factors specified for gross weight and flaps up are 3.8 positive and -1.52 negative for gusts and maneuvers. Certification is under CAR Part 03 in the normal category at a gross weight of 4,600 lbs.

Veteran Aircraftsmen in Charge

A former Douglas Aircraft Company aeronautical engineer conceived the original design of the Aero Commander. He is Ted R. Smith, now general manager of the new firm which is building the craft. He and a group of West Coast aircraftsmen developed the engineering beginning in 1944 and built the prototype at the Culver City (California) airport in 1946. Most of the original group are still with Smith, occupying key positions in the new Oklahoma City concern. These include A. H. Moore, engineering manager, who was with Douglas and at one time was in charge of fuselage design for the A-20; R. O. Absher, production manager, who has spent 14 years in aircraft development work; J. L. Anderson, wing assembly section manager; Harry Branton, fuselage assembly manager, who has 11 years of experience in supervising production and development of control surfaces and structural components; Ernest Bahr, manager of installations and final assembly, who has a background of 14 years of aircraft production supervision; Richard McInturff, manager of tail group section, with 10 years of aircraft production background; A. H. Becker, manager of fabrication, with 14 years in a West Coast aircraft plant behind him, and B. L. Bantle, flight operations manager, who is a graduate engineer and was for four years an engineering test pilot for CAA.

Aero Design and Engineering Company is described as a million-dollar enterprise, with the principal stockholders being R. T. Amis, prominent Oklahoma construction contractor, and George T. Pew, Philadelphia engineer and pilot. Amis is president of the firm. Smith and his West Coast associates had paid for the design and prototype before moving the project to Oklahoma City, where Amis and Pew organized the firm with ample capital to manufacture and market the airplane. Most tooling for parts had been made during construction of the prototype, and this was moved into a new plant obtained at Tulakes Airport, a little-used field built during the war and acquired by the city as a secondary municipal airport. The new plant is equipped with a modern sheet metal shop with equipment, including a huge hydro press and heat treating facilities.

First flights by the prototype were made on April 28, 1948. On June 30, 1950, the CAA approved its airworthiness and issued Aero Design and

(Continued on page 34)

Aviation's Greatest Challenge

President Truman's amazing goal exceeds the aircraft industry's expansion capabilities

By TOM ASHLEY

CONFIDENT as ever, President Harry S. Truman has now declared a state of national emergency exists. In his radio announcement of this action last month, he sought to assure the people that defense mobilization is progressing handily. One example, he said, is accelerated aircraft production: *"Within one year we will be turning out planes at five times the present rate of production."*

Those who know the facts of aircraft production as they actually exist can not help but question the President's accuracy in predicting a 500 per cent increase in output during the next 12 months. The Truman goal is exactly 200 per cent more than production experts expect, *even with all-out effort, which has not yet been ordered.*

Note, for example, the experience of the aircraft engine industry as charted on the opposite page by H. M. Horner, president of United Aircraft Corp. Horner's facts were presented to government officials months ago when mobilization was in the talking stage. He and others familiar with the facts were amazed when the President's 5-fold expansion program was calmly revealed in his December radio talk—Horner, in fact, commented that 5-fold expansion of aircraft engine production during the current year "simply is not in the deck."

Since then, the aircraft industry has studied President Truman's statement promising that within 12 months we will be turning out planes at five times the present rate of production. It just doesn't add up.

Goal Exceeds 1940-44 Record

"Such an increase manifestly is not within the capabilities of the aircraft industry alone," commented the Aircraft Industries Association of America, Inc., in a statement released by its president, Admiral DeWitt C. Ramsey, retired. "The production goal projected for the aircraft industry in 1951 by President Truman would require a far more rapid expansion in output than was found possible in World War II."

The seriousness of the discrepancy between the President's hopes and the aircraft industry's facts calls for careful evaluation of aircraft production and its expansibility. As of last month, according to AIA, the U. S. was producing military aircraft at a rate slightly under 4,000,000 lbs. of airframe weight per month, or the equivalent of about 250 military planes per month. At the end of December, 1951, says the President, we will be turning out 20,000,000 lbs. of airframe weight per month, or about 1,250 military airplanes if the average weight remains the same. But the best the records indicate we can accomplish falls short of this by 8,000,000 lbs. of airframe weight per month, or 500 airplanes.

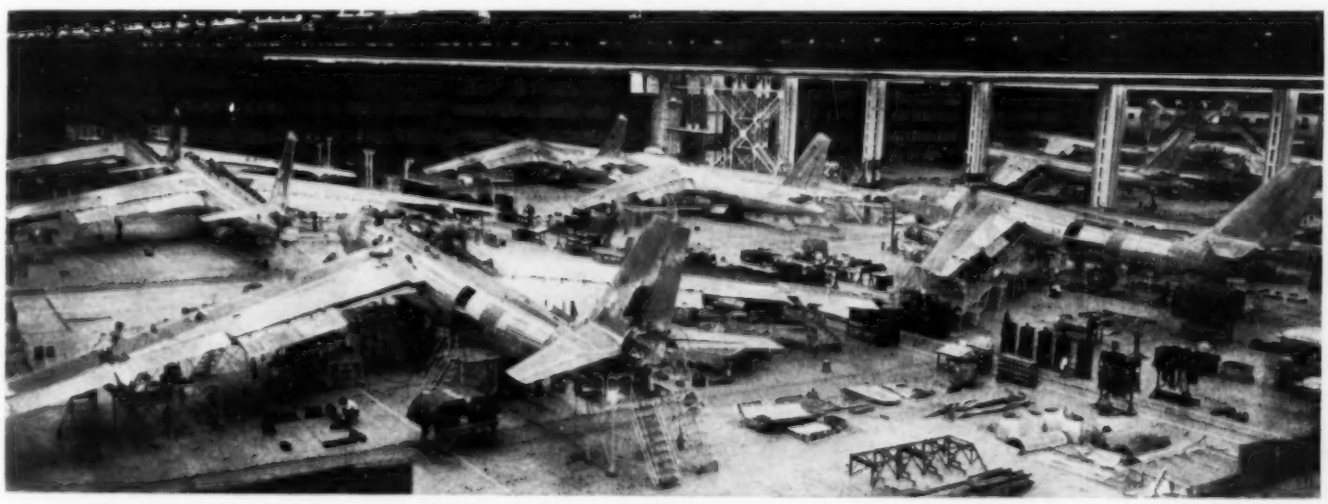
President Truman hasn't revealed his formula for expansion. The most reliable index to the industry's capabilities is its record of expansion during World War II. This record has been studied and re-studied in the light of modern conditions and design trends and it still represents the industry's potential rate of acceleration. Here it is:

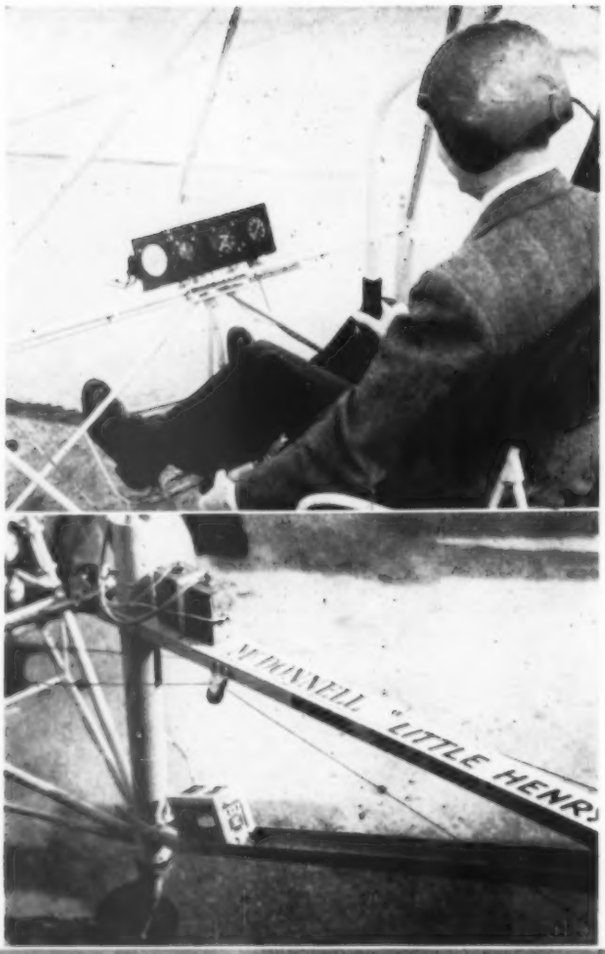
	U. S. Airframe Production, Lbs.
May, 1940	1,900,000
May, 1941	6,299,000
May, 1942	23,202,000
May, 1943	60,500,000
	U. S. Aircraft Production, Units
May, 1940	450
May, 1941	1,380
May, 1942	3,983
March, 1944	9,113

In other words, the industry was

(Continued on page 34)

MAJOR EMPHASIS FOR EXPANDED OUTPUT IN INDUSTRY'S FEW BIG PROJECTS is on Boeing's radical B-47 Stratojet bomber, shown below in final assembly at Wichita, Kansas. Recently-established employment peak of 15,000 workers has now been boosted to 18,000. Of present force, 25 per cent have been placed on special overtime schedules calling for 60-hr. work week on a basis of two 10-hr. daily shifts six days per week. —(Boeing Photo.)

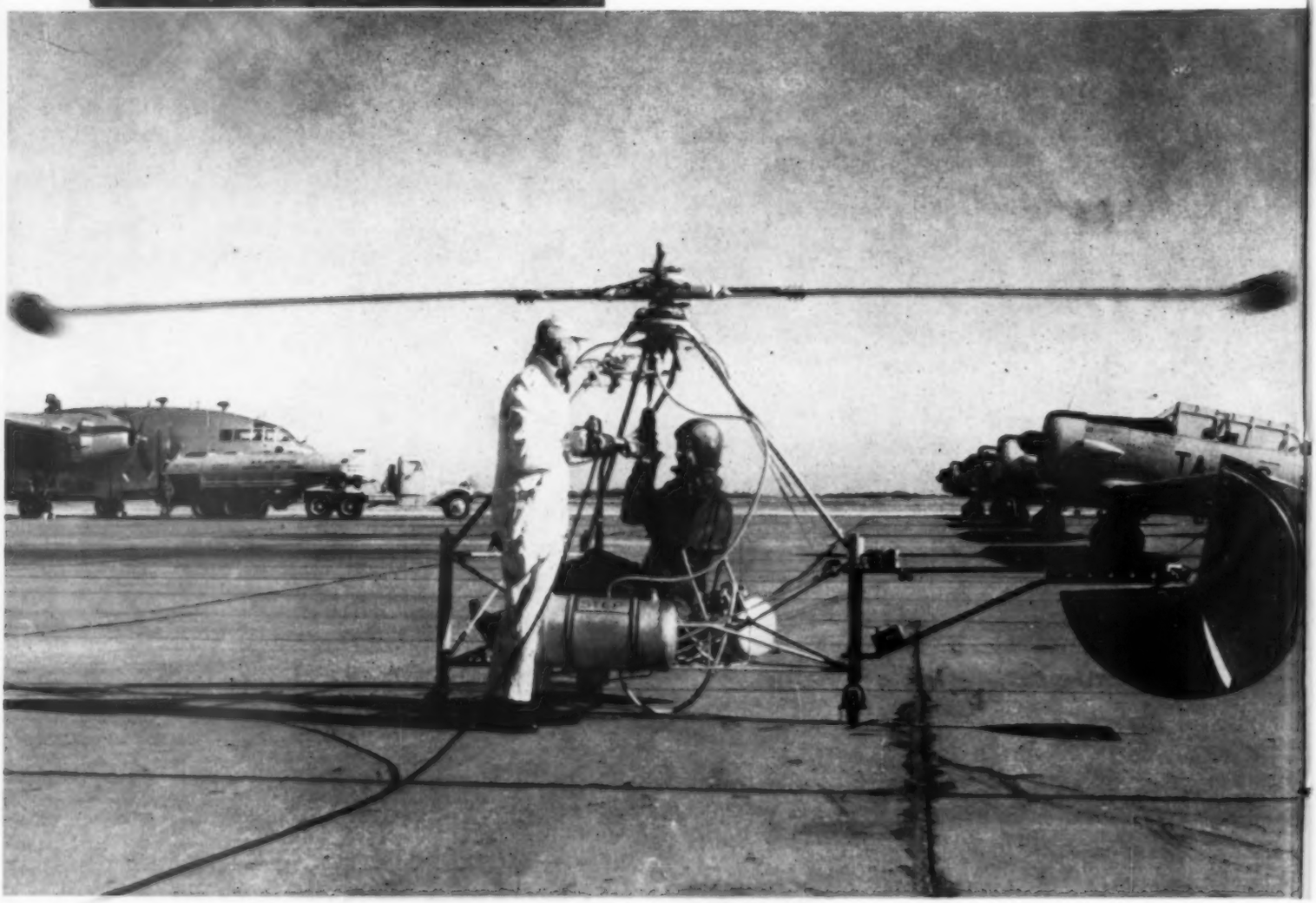




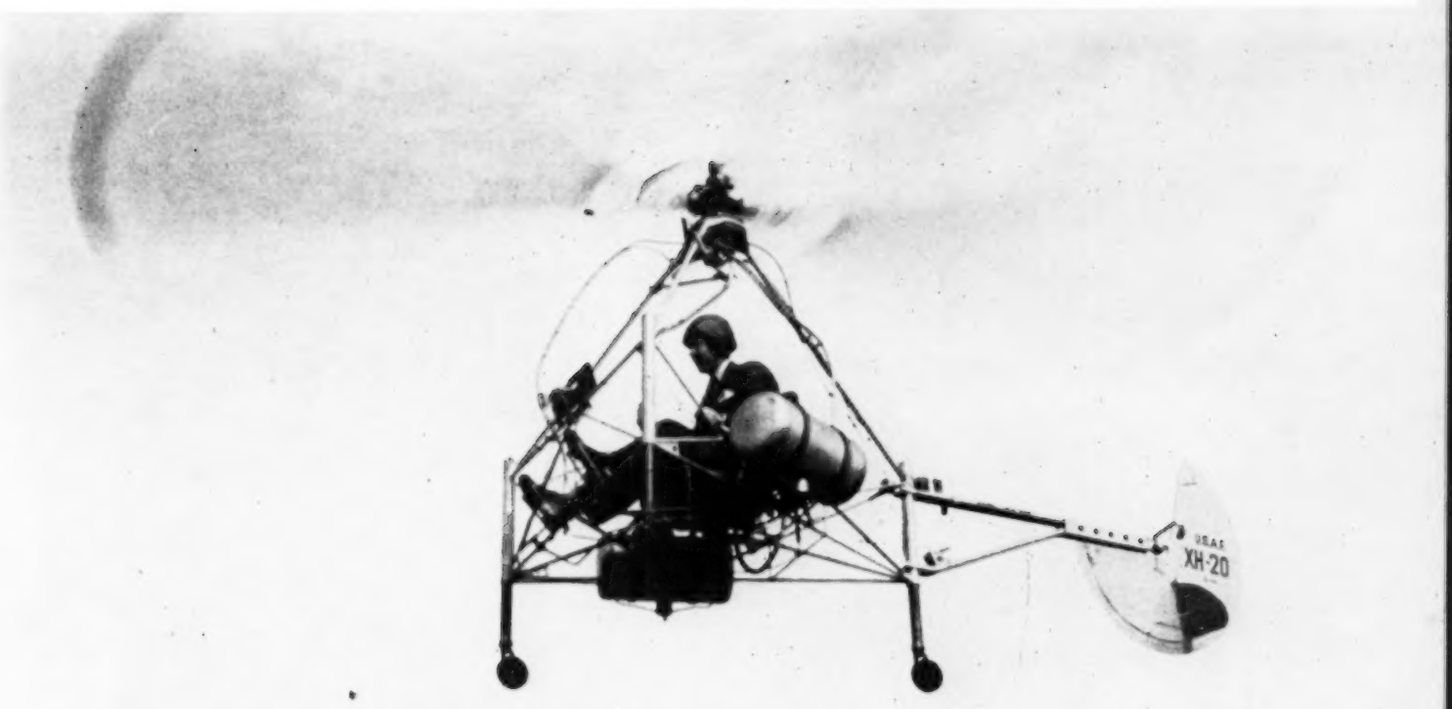
flight pictorial

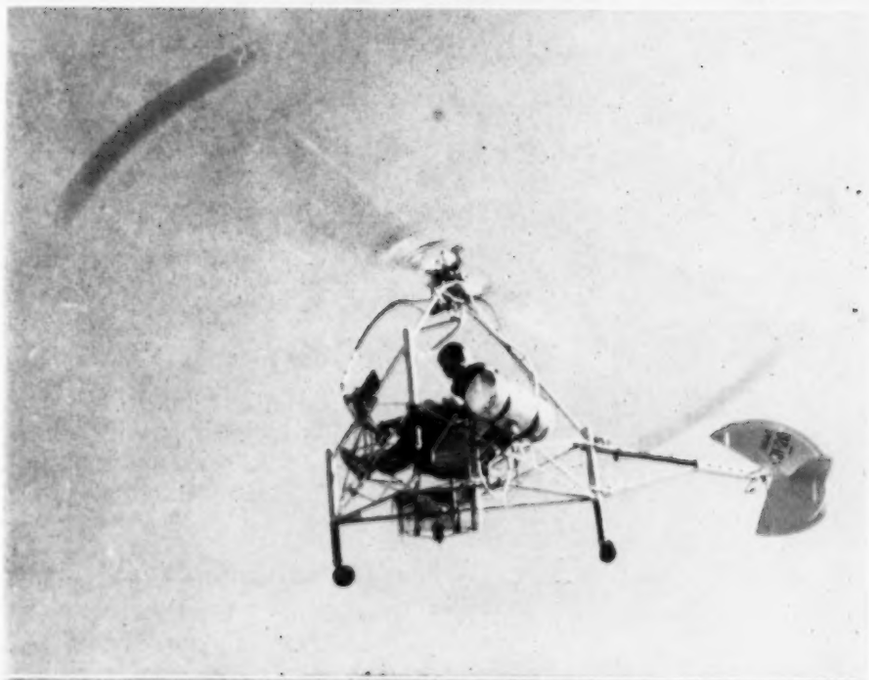
RAM-JET HELICOPTER SIMPLICITY was demonstrated last month to aviation writers by McDonnell Aircraft Chief Test Pilot C. R. Wood in the USAF experimental "Little Henry" at Connally Air Force Base, Texas. Close-ups at left show instrument panel at top and ignition system, consisting of two 6-volt dry cells and two Model T coils. In scene below, power tool is used to twirl blades for starting. Hand starting was also demonstrated. Spark from coil ignites first one, then other burner, after which no ignition is needed. Ram-jets at blade tips generate 25 hp. each, have no moving parts, are expected to give 350-500 hrs. trouble-free operation. Rotor diameter is 18 ft.

—(FLIGHT MAGAZINE Photos.)



RESEARCH CROP PLANE TESTS began





FLIGHT STABILITY of McDonnell's XH-20 "flying motorcycle" has been perfected to remarkable degree, there being no torque, none of the usual helicopter shake or vibration. Control response is smooth, instantaneous. Rotor speeds at 600-700 rpm. are about 350-450-mph. at tips, being well below speed of sound and offering reserve of energy to simplify power-off landings. Fuel consumption of 1 gal. per min., is 50 per cent below that of last year, will be reduced further through refinements and single-engine operation. Ram-jet's outstanding feature is almost total elimination of engine maintenance which handicaps conventional rotary-wing craft. Empty weight is 280 lbs., normal gross is 625 lbs. and flights have been made at an 800-lb. gross. In these flight scenes, note various positions of novel rudder designed by McDonnell.
—(FLIGHT MAGAZINE Photos.)

flight pictorial

RESEARCH CROP PLANE TESTS began last month with CAA Test Pilot C. W. von Rosenberg making first flights at Texas A. & M. College. In take-off picture at left, note plan-form of high-lift wing and its ailerons and flaps; wide-tread Cessna landing gear; visibility from single-seat cockpit. Wing area is 286 sq. ft.
—(FLIGHT MAGAZINE Photo.)

flight pictorial

OLD AND NEW OF AIR CROPPING are pictured below with all-metal research plane posed by Stearman duster, giving idea of new research plane's size. Empty weight is 1,900 lbs., normal gross 3,400 lbs. Engine is new-type 225-hp. Continental, with McCauley fixed-pitch propeller. Simplicity of structure and ease of maintenance were emphasized in design.
—(Texas A. & M. Photo.)

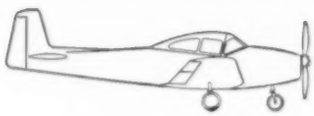
flight pictorial

C. W. (Ted) von Rosenberg of CAA 4th Region is shown in high cockpit which features small windshield; over-turn safety structure which also offers protection against low wires or cables; 40G adjustable pilot seat with shoulder harness. Inertia reel supports harness for pilot's freedom of action. Cockpit is behind all loads and heavy masses and is protected by long forward structure and wing.
—(FLIGHT MAGAZINE Photo.)

OFFICIALS AT FIRST FLIGHT are, left to right below: Texas A. & M. Chancellor Gibb Gilchrist; CAB Chairman Del Rentzel who, as CAA Administrator, was instrumental in launching joint research crop plane project with CAA, U. S. Agricultural Department, Flying Farmers Association, Texas A. & M., and manufacturers; Fred Weick, director of Texas A. & M. Personal Aircraft Research Center, and Pilot von Rosenberg of CAA.
—(FLIGHT MAGAZINE Photo.)

THICKNESS OF HIGH-LIFT WING is emphasized below. Fred Weick is holding access door to spray tank in right wing. Fuel and dust hopper are in fuselage in front of pilot. Spray dispensing equipment is housed inside of wing. Spray tankage totals 150 gals.; dust hopper has 57-cu. ft. capacity, and fuel tankage is 48 gals. Wing span is 39 ft., fuselage length 29 ft. 8 ins., and height 8 ft. 7 in. Speeds: From 37-mph. landing to 115 mph. maximum, with 60-90-mph. operating speed.
—(Texas A. & M. Photo.)

FLY ALL THREE BEFORE YOU BUY!



We Sincerely Believe You'll Choose Navion

BE SURE OF GETTING ALL THE QUALITIES YOU WANT MOST in an airplane . . . *fly all three before you buy.* Call your Navion dealer today for a demonstration flight. Take the wheel yourself. Note how easily it flies. *Make your own direct comparisons on the complete check list at right.* Discover for yourself how the Navion's greater number and better combination of superior features make it a better over-all plane for *you.*

RYAN AERONAUTICAL COMPANY
601 LINDBERGH FIELD, SAN DIEGO, CALIFORNIA

Ryan Navion

NAVION INVITES COMPARISON!
Check All These Points Yourself

PERFORMANCE	SUPER *NAVION*	PLANE B	PLANE C
Cruising Speed (full load)	170 m.p.h.		
Rate of Climb (full load)	1250 f.p.m.		
Take-off Run (full load)	400 feet		
Service Ceiling (full load)	18,000 feet		
Range at Maximum Cruise	681 miles		
Fuel Cost	2¢ per mile		
SAFETY			
Slow-Flight Stability	Aileron control below 55 m.p.h. stall		
Landing Roll	470 feet		
Landing Speed	55 m.p.h.		
Lift-Flap Efficiency	43° Deflection—63% more lift		
Visibility	360°—7 Windows		
Power Plant	Lycoming 260 h.p.		
Fuel System	Dual Pumps		
EASY FLYING			
3-Way Stability	Fly "Hands and Feet Off"		
Controls	Exclusive Inter-connected system		
ROOMINESS & COMFORT			
Cabin Dimensions	Width 43" Head Room 38"		
Leg Room	40" to 50"		
Front Seats	Adjust Individually		
Sound Level	None Quieter		
Propeller Noise	Quiet—1765 R.P.M.		
Useful Load	953 Pounds		
RUGGEDNESS			
All-Metal Heavy Gauge	Yes—.040 to .032 Leading Edge		
Low-Wing	Yes		
Tri-Cycle Gear	Yes—Main Wheels 7.00 x 8		
Steerable Nose-Wheel	Yes—6.00 x 6		
Exterior Finish	Durable Enamel Overall		

LUGGAGE MASTER permits loading and unloading of baggage without entering cabin. Folding seat gives access to baggage in flight.

BEAUTIFUL NEW UPHOLSTERY in rich colors and luxurious fabrics; leather trim. Styled by Charles of California. Foam rubber cushions.

HARTZELL ALL-METAL SELECTIVE PITCH PROPELLER is now available. Adjustable cowl flaps give improved engine cooling, better performance.

NEW "REVERSE FLOW" VENTILATION system sets new standard for abundant fresh air circulation. Push-button starter on dash.

NO OTHER PLANE COMBINES SO MANY FEATURES SO WELL

We predict . . .

PIPER will lead in 1951

The 1951 Piper models, the TRI-PACER, PACER and SUPER CUB were designed to serve your every purpose and need in business and pleasure. These outstanding models for 1951 offer the ultimate in air transportation with low initial cost and economical maintenance requirements. We invite you to let us show you why more people buy PIPER than any other business or personal plane.

TRI-PACER

THE PACER

SUPER CUB

ARIZONA

ANDERSON AVIATION COMPANY, Inc.
Sky Harbor Airport
Phone 3-9023
P. O. Box 2406
Phoenix, Arizona

OKLAHOMA

SMYER AIRCRAFT SALES AND SERVICE
Municipal Airport
Phone 3375
Ponca City, Oklahoma

TEXAS

WICHITA FALLS AIR TRANSPORT CORP.
Municipal Airport
Phone 2-8693
Wichita Falls, Texas

ARKANSAS

ARKANSAS AVIATION SERVICE, Inc.
Grider Field
Phone 1960
P. O. Box 248
Pine Bluff, Arkansas

PIPER

JACK ROBINSON FLYING SCHOOL
Phone NO-5144
Meacham Field
Fort Worth, Texas

NEW MEXICO

B. F. HINES FLYING SERVICE
Hobbs Lea County Airport
Phone 176J
Hobbs, New Mexico

TEXAS

BROWN FLYING SERVICE
San Antonio Municipal Airport
Phone Travis 3422
San Antonio, Texas

CLIFF HYDE FLYING SERVICE, Inc.
Sam Houston Airport
Phone MOhawk 4-551
Box 8125
Houston, Texas

FOUR-PLACE PIPER TRI-PACER WITH NOSE WHEEL LANDING GEAR is scheduled to go into production this Spring. Empty weight is 30 lbs. greater than standard 4-pl. Pacer and cruising speed is just over 120 mph. with a range of nearly 5 hrs. Nose wheel is steerable with rudder pedals. Rudder and ailerons are interconnected through spring linkage for co-ordinated turns with wheel or pedals alone, or for independent use of controls. Engine is 125-hp. Lycoming.
—(Piper Photo.)

flight pictorial

Nose wheel is same size as main wheels, which are farther aft than on standard Pacer and have 12-in. wider wheel tread.
—(Piper Photo.)

ALL-FLYING TAIL of North American Aviation's new series F-86E Sabre links horizontal stabilizers with elevators for co-ordinated movement. Better longitudinal control results, eliminating loss of control effectiveness due to heavy air loads at extremely high speeds. F-86E also has irreversible power-boost controls with "artificial feel."

—(North American Aviation Photo.)

COMBINATION TRAINER-TRANSPORT-FREIGHTER FOR MILITARY FORCES is this proposed Glenn L. Martin "Airlift" Model 404, offered with either piston or turbo-prop engines. Based on commercial model being delivered to airlines, basic specifications include carrying 15,000-lb. payload over combat range of 1,500 miles at 270-mph. Piston engines would be 2,500-hp. Pratt & Whitney R-2800-CB-14's. Jet version would use Allison T-38 turbo-prop engines.

—(Glenn L. Martin Drawing.)

flight pictorial

DOCTOR-LAWYER-MERCHANT-CHIEF RHYME CAN'T HOLD CANDLE to Dr. E. W. K. Andrau of Houston, shown in his Navion during recent rice harvest. Without airplane, he says he couldn't operate all his enterprises, including oil production, rice farming, ranching, mining and an airport, latter being only private field in Houston with paved runways. Individual hangars are going up for 27 private owners based there, all of whom are business men who have joined Dr. Andrau in organizing Texas' first civil air defense unit boasting 100 per cent participation of all planes and pilots on an airport. He was an Air Force combat intelligence officer in World War II.

The Birdmen's Perch

A hangar, a hangar, my kingdom for a hangar!

If you're one of those bright-faced enthusiasts, happily contemplating plane ownership, take heed!

Hangar space is at a premium! All of which means that when you set that shiny hunk of merchandise down at the local airport, you'll probably have to settle for tie-down space in the cold outside!

Any flyboy will tell you that all that dust and moisture floating around in the ozone present some not-too-amusing maintenance problems!

We think, *even before you become the proud possessor of a bill of sale*, it would be wise to look pretty thoroughly into this matter of "outdoor parking"!

AH YES—THE COMMERCIAL

Gulfpride Aviation Oil—Series D—won't keep your hair looking like a million bucks! It won't even pep up a salad dressing!

But—by Jupiter—it's the finest detergent dispersant oil for horizontally opposed engines there is!

Let's face it, Gulfpride Aviation Oil—Series D—is the only aviation oil put through Gulf's exclusive Alchlor process to remove those extra carbon and sludge formers. It keeps valves and rings happy as a bunch of school kids on a picnic.

Whether you're the outside loop type, or one of the soar-and-see variety, Gulfpride Aviation Oil—Series D—will increase those periods between overhauls up to 100%—yes, 100%!

GULF

AVIATION PRODUCTS

ALWAYS LEAVE YOUR PLANE SECURE WHEN YOU LEAVE IT OUTDOORS...
OR A STIFF WIND MIGHT TAKE IT FOR A JOYRIDE, AND YOU...
MIGHT NEVER GET TO USE THAT TANKFUL OF SUPERPOWERFUL GULF AVIATION GASOLINE!
COE

Gulf Oil Corporation . . . Gulf Refining Company

AIR REPORT

(Continued from page 7)

ginning at that time. . . . **FULL-FEATHERING HARTZELL PROPELLER** is being developed for 260-hp. Lycoming engines used in Aero Commander, and one model of the light twin will be powered with 260 Lycomings supercharged for 240 hp. at 8,000 ft.

BEECHCRAFT TWIN BONANZA NOW CARRIES $44,950 PRICE TAG and will be "completely equipped" at that price except for radio installations. This is first official price announced by Beech, which had hoped to market the 6-pl. Model 50 in the $30,000 bracket. A detailed study of rising materials and labor costs resulted in the larger figure.

FAILURE OF CAA TO TAKE INITIATIVE in civil air defense direction at the grass roots level, plus lateness of state officials to establish a uniform program which would encompass all civilian airmen and equipment, is creating confusion. By-product of confusion is rapid growth of Civil Air Patrol.

OLIVE ANN (MRS. WALTER H.) BEECH has been elected president and chief executive officer of Beech Aircraft to succeed her late husband. One of America's outstanding women executives, she was a co-founder of the company she now heads. Other officers are John P. Gaty, vice president-general manager; T. A. Wells, vice president-chief engineer; Frank E. Hedrick, vice president-coordinator; John A. Elliott, treasurer; and L. Winters, assistant secretary.

USAF HAS BOUGHT 6 CANADIAN-BUILT DE HAVILLAND BEAVERS, two of which will be sent to Alaska for cold weather trials. . . . **FIRST U. S. PURCHASES OF DE HAVILLAND DOVE** have been to Jack Riley of Shreveport, La., distributor who received his demonstrator in December, and to John Wrather, East Texas oil operator, who was to receive his Dove from Riley in January. Standard price is $76,000. . . . **2 DOVES HAVE BEEN BOUGHT BY WIGGINS AIRWAYS,** scheduled mail-passenger feeder airline in the Northeast. Wiggins has option for delivery of 4 more Doves. They will replace Twin Cessnas in airline service.

OLDEST LICENSED PILOT in U. S., James W. Montee, celebrated his 88th birthday as usual recently—by hopping his daughter and granddaughter in a lightplane at Vail Field, Los Angeles. He soloed in 1922 at age of 60, has pilot license No. 414, A. & E. License No. 1,367, flew a DC-6 for an hour last month—the 40th different make of plane he has flown. Photo is from his annual greeting card to friends, who wish him many more birthday hops.

LAST PUBLIC APPEARANCE OF WALTER BEECH before his sudden death from a heart attack on November 29 was at CAA Airports Advisory Committee meeting in Fort Worth, Texas, in October, when above photo was made. Shown with him, left to right, are Committee Member John H. Burke, Oklahoma City airport owner and one of Beech's early employes; Amon G. Carter, Fort Worth Star-Telegram publisher and honorary member of the committee; CAB Chairman Del Rentzel, and George E. Haddaway, Aviation Development Advisory Committee chairman and FLIGHT MAGAZINE publisher. —(Ft. Worth Star-Telegram Photo.)

To Our Readers

THIS is your first copy of an old friend with a new name — FLIGHT MAGAZINE. We didn't drop the "You All" without certain sentimental misgivings; but it had to go — a belated admission of our true editorial interests and coverage.

For all you unreconstructed rebels, including members of the Confederate Air Force, we will continue, as for the past 17 years, to accept Confederate currency in payment for subscriptions. Current rate of exchange is 20 to 1.

We hope you like the improved format, more pictures, specifically in the new FLIGHT PICTORIAL section, the better grade of paper, together with broader editorial coverage as exemplified by the first of twelve monthly articles by General Hugh J. Knerr (USAF Ret.), one of the most renowned military aviation writers of the era.

—THE STAFF.

BELL AIRCRAFT CORPORATION OF BUFFALO, NEW YORK, WILL SOON OCCUPY THE FORMER GLOBE AIRCRAFT COMPANY PLANT NORTH OF FORT WORTH, TEXAS. The plant will be used primarily for large sub-contract orders for factories in the area.

MAJOR PRIVATE FLIER GET-TOGETHER SO FAR ANNOUNCED FOR 1951 IS THE ANNUAL ORLANDO, FLORIDA, AVIATION FIESTA SCHEDULED FOR FEBRUARY 14-28, which will include the annual Flying Alligator Club reunion and initiation, conducted air tours to various points of interest in Florida, and the "On To Orlando" cross-country flight competition. Complete information on the event is available from Ed Nilson, Annual Aviation Fiesta, Box 3151, Orlando, Florida.

INCREASED AIRCRAFT INSTRUMENT AND ACCESSORY OUTPUT will be furthered by Bendix Aviation's purchase of the property and facilities of the Victor Animatograph Corp., at Davenport, Iowa. Victor Animatograph, a Curtiss-Wright subsidiary, had manufactured motion picture projectors and parts there. W. W. Fisher, former Bendix manager at Red Bank, N. J., will be general manager of the new facility, which brings to 17 the number of Bendix divisions exclusive of subsidiaries. Davenport will be operated as an independent source of important aircraft instruments for the armed services, thus representing another step in the dispersion of Bendix facilities for military supply. ★ ★ ★

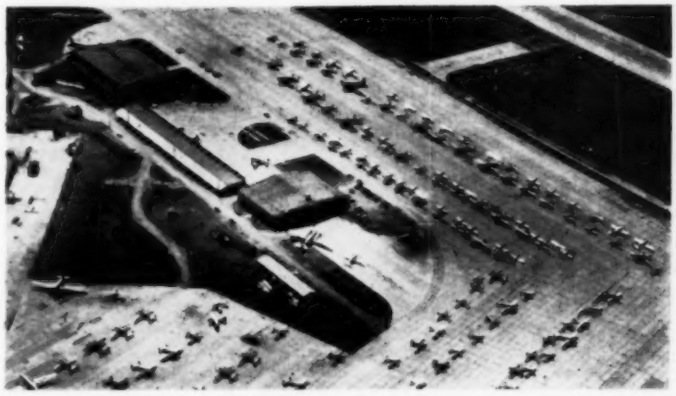
IMPORTANT ANNOUNCEMENT for OWNERS and PILOTS

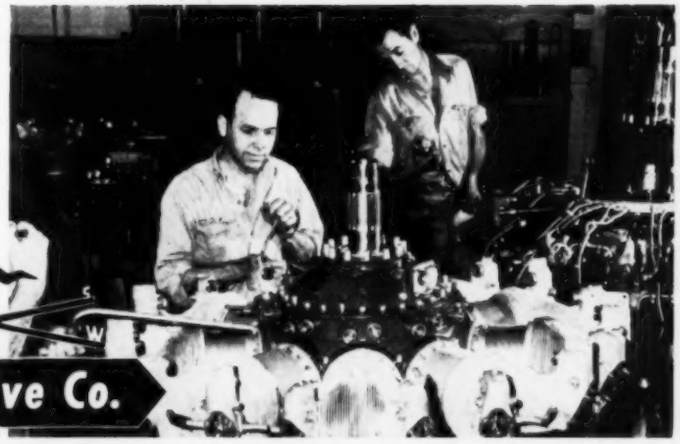
EXECUTIVE AIRCRAFT MAINTENANCE AND REPAIRING DURING EMERGENCY

Southwest Airmotive's doors are WIDE-OPEN for service on ALL TYPES of executive airplanes NOW! If you've tired of being at the tail-end of the line elsewhere, move up to the front at SAC for executive aviation's most famous ONE-STOP maintenance!

As an example of how to go about getting your aircraft ready immediately for continued use in this time of growing shortages, we invite your urgent attention to the following:

1. ***R-985 AN-14B engines, rebuilt to NEW STANDARDS and carrying NEW ENGINE GUARANTEES: $4,000. (Here's your chance to TAKE OUT INSURANCE against an uncertain future.)***
2. ***R-985 engine exchange, with immediate delivery: Prices start at $1,050, depending upon time on your "trade-in."***
3. ***TWO-WEEK DELIVERY DATE, and ALL-INCLUSIVE FLAT RATE (both parts and labor) for overhaul of your own R-985: $1,250.***
4. ***An ON-HAND stock of NEW R-985 parts.***
5. ***The industry's finest inspections, repairs, overhauls, conversions for DC-3, D18S, Lodestar, Mallard, B-25, B-23, A-26, Bonanza, Navion, and all other executive types. NO. 1 PRIORITY for EXECUTIVE PLANE SERVICE in aircraft, engine, accessory, propeller, instrument, and radio shops.***



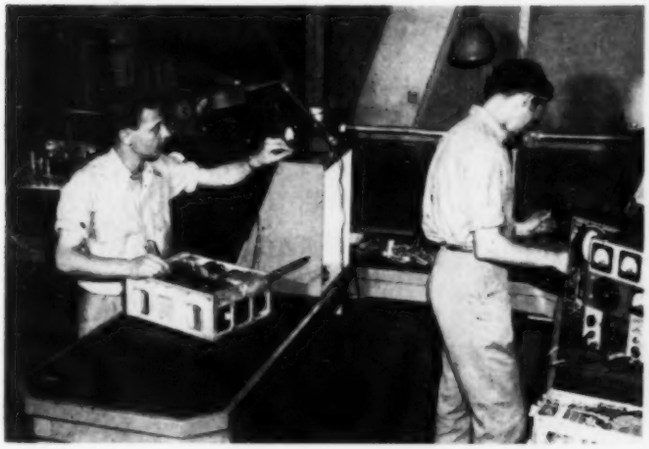


Letters, wires, telephone calls, and personal inquiries given prompt attention.

"THE FLAT RATE COMPANY"

Southwest Airmotive Co.

LOVE FIELD, DALLAS CAA Approved Repair Station No. 195



AVIATION'S CHALLENGE

(Continued from page 21)

only able throughout World War II to triple its output in a 12-month period. This was all-out expansion.

Where Are the Orders?

"If the industry is now to meet the goal of a 5-fold increase set by the President, the necessary production contracts should be placed immediately," says Admiral Land of AIA. "Adequate priorities for machine tools, production tooling and all other equipment used to expand output must be provided. The supply of critical materials available for aircraft production must, of course, be increased proportionately to the larger output goal.

"Aircraft today are roughly twice as large and are far more complicated than the aircraft produced in World War II. As a result, it takes approximately four times as many man hours to build a current model as compared to the planes of 10 years ago.

"Training programs to augment appreciably the force of skilled labor in aircraft plants must therefore be started promptly and accorded needed government support, The work week will have to be lengthened, with the government authorizing overtime payments called for in Federal law."

All these conditions outlined by the AIA concern problems which aircraft manufacturers can not solve alone—their solution must be initiated by the government before a 3-fold output expansion can be effected, much less a 5-fold expansion. The fact that they have not yet been tackled is almost certain proof that President Truman was using a crystal ball of some kind, or just pulling numbers out of a hat, when he so confidently predicted we will be turning out five times as many military planes a year from now. If Washington planners expect to hold to his over-optimistic statement, the government as well as the aircraft industry had better get busy in a hurry to catch up from such a late start. Mobilization plans must be bigger than anything ever experienced in this country; certainly they must be bigger than anything so far revealed.

"The President's goal is the greatest challenge ever faced by the aircraft industry," says the Aircraft Industries Association spokesman. "Such an increase manifestly is not within the capabilities of the aircraft industry alone. It can only be attained by maximum possible co-operation and support on the part of the supplying industries and every government department and agency in any way concerned."

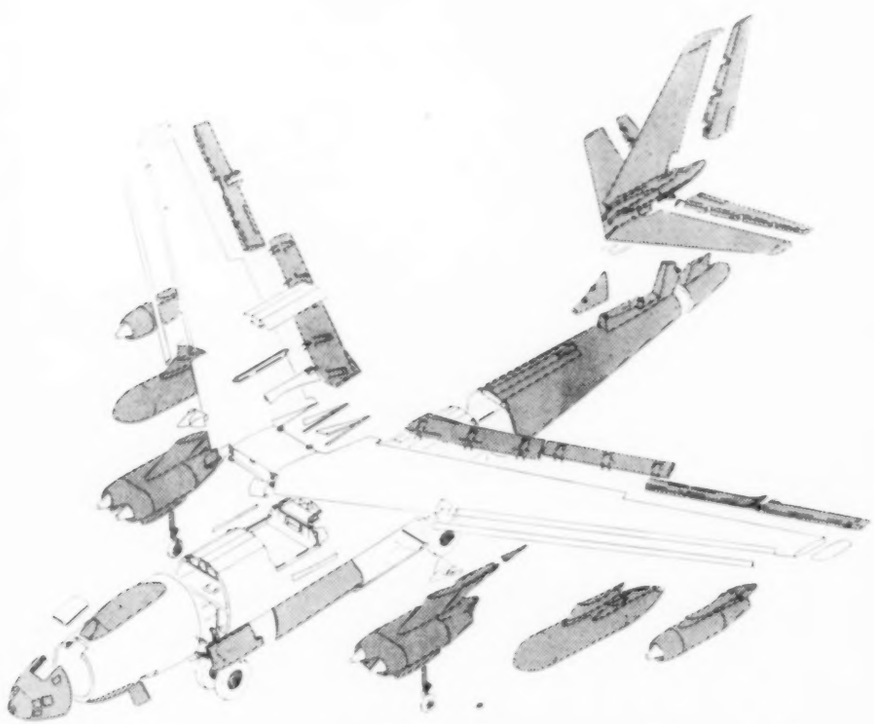
While confusion is nothing new to the city on the Potomac, few ever expected the President to get as far out on a limb as this one having to do with confidently expecting 500 airplanes per month which can't possibly be built under present conditions and on the basis of physical facts available for study and planning. An error of some 200 per cent is a serious one. Applied to military commitments involving U. S. security, it can have tragic results. President Truman's advisors should re-examine their plans for mobilization, taking immediate steps to correct such errors with action calculated to expand aircraft production on an all-out schedule and as thoroughly as possible. The aircraft industry has been standing by for years with complete facts and figures essential for expansion in an emergency. This same information has been presented to various Congressional committees and executive boards as well as to the press. That the President has not made use of it is startling news, indeed, especially at this late date.★★★

Quotable Quotes

HANSON W. BALDWIN, military writer of the *New York Times:* "Strategically and militarily we are in an impossible position in Korea and one which we ought to strive to end as rapidly as possible lest we be bled white. . . . This—the question of what to do—is the great dilemma of today. We are in a 'damned-if-we-do-and-damned-if-we-don't' position. Western Europe is still the most important strategic area in the world struggle against Communism. But we can lose the world in Asia if we are not wise and strong."

SLIM KIDWELL, Central Airport operator, Los Angeles, who may give up his airport under pressure of higher taxation and insurance costs: "We put in a light to clear pilots for take-off and landing—a safety measure mind you—and what happens? Our insurance goes up because we are 'inviting' ships into the field, helping them on take-off! Make your field safer, your responsibility goes up—and so do your costs. You can't win!"

★ ★ ★



ACCELERATED B-47 PRODUCTION IS HELPED BY WIDESPREAD SUBCONTRACTING of components, shown in shaded areas. Performed by outside firms, this subcontracting, plus outside purchases of parts and materials, amounts to 67.4 per cent of the total B-47 airframe cost.

—(Boeing Drawing)

AERO COMMANDER

(Continued from page 20)

Engineering Company ATC No. 6 A1. Smith has commented that one of the development's most encouraging features was that practically no problems or bugs at all turned up during the prototype's flight test program and no substantial changes or alterations were necessary for CAA approval.

"As a design, the Aero Commander was 'right' from the very beginning," he says. He accounts for its high performance by emphasizing its light weight, achieved through simplicity in design. The structure avoids joints in the wings and empennage to eliminate heavy fittings and castings. A total of 32,000 man hours of engineering went into the design, and another 10,000-man hours went into improvements on the design for production.

(Continued on page 48)

The *Lear Automatic Pilot*

A GREAT *new era in private flying is dawning for people, most of them business men, who fly their own airplanes for transportation. For the first time they now have available a more practical kind of flying than they ever experienced: Safer, less fatiguing, more comfortable autopilot flying that makes for more dependable transportation.*

The Lear L-2 Automatic Pilot will hold your airplane laterally and longitudinally level in fair weather or foul, in turbulent air or smooth, without requiring a finger or foot at the airplane's controls. (2) It will hold your airplane on any course you select and hold it automatically, accurately, and smoothly. (3) It will enable you to alter this course at will in a smoothly coordinated, automatically executed turn. (4) It will automatically maintain your airplane in any desired safe angle of climb or descent. (5) It will automatically maintain your airplane in any desired safe climbing or descending turn.

Already installed in Navions, Bonanzas, Cessnas, DC-3's, Lodestars and Twin Beeches, and with many thousands of customer-hours behind it, the L-2 autopilot is today a fully proved, widely accepted, readily purchasable reality.

Visit the Lear Distributors Listed Below for a Demonstration of the Lear L-2 Automatic Pilot.

FLORIDA

FLORIDA AVIATION COLLEGE, INC.
Tampa International Airport
Tampa

IOWA

HUNTER FLYING SERVICE, Inc.
Hunter Field
Cedar Rapids

MICHIGAN

FRANCIS AVIATION
Capitol City Airport
Lansing

NEW MEXICO

CUTTER-CARR FLYING SERVICE
West Mesa Airport
Albuquerque

NORTH CAROLINA

CAROLINA AERONAUTICS, Inc.
Box 1021
Hendersonville

TEXAS

ASSOCIATED RADIO
Love Field
Dallas

CLIFF HYDE FLYING SERVICE, Inc.
Sam Houston Airport
Houston

GENERAL AERONAUTICS, Inc.
Meacham Field
Fort Worth

WILSON RADIO CO.
Municipal Airports
Tulsa Fort Worth Houston

TENNESSEE

DIXIE AIR ASSOCIATES, Inc.
Municipal Airport
Memphis

How priced and how small? The complete Lear unit costs $2,990. Add the cost of installation, which has averaged about 100 man-hours for types such as the Bonanza and about 200 man-hours for the Twin Beech. Total weight of the unit is 29.7 lbs.

The Lear Automatic L2 Pilot

Progress in aviation is not always achieved at the same even rate. Sometimes it inches along with very little change; other times it picks up speed and travels at a gallop. And on very rare occasions—as now, for example, with the perfection of the Lear L-2 Automatic Pilot an accomplished fact after seven long years of designing, engineering, and testing—aviation suddenly leaps ahead into *an entirely new era* of flight safety and simplicity.

Yet, new as it is, the Lear L-2 Autopilot is by no means untried—by no means merely a promise of things to come. Already installed in Navions, Bonanzas, Cessnas, DC-3's, Lodestars and Twin Beeches, and with many thousands of customer-hours behind it, the L-2 autopilot is today a fully proved, widely accepted, readily purchasable *reality*.

WHAT WILL IT DO? (1) The L-2 will hold your airplane laterally and longitudinally level in fair weather or foul, in turbulent air or smooth, without requiring a finger or foot at the airplane's controls. (2) It will hold your airplane on any course you select and hold it automatically, accurately, and smoothly. (3) It will enable you to alter this course at will in a smoothly coordinated, automatically executed turn. (4) It will automatically maintain your airplane in any desired safe angle of climb or descent. (5) It will automatically maintain your airplane in any desired safe climbing or descending turn.

In other words, the L-2 is both a *stabilizing* and *maneuvering* automatic pilot, operating on all three axes—roll (aileron), pitch (elevator), and yaw (rudder).

NOW LET US TRANSLATE these five basic functions of the Lear L-2 Autopilot into the actualities of everyday flying. What does the automatic flight control of the L-2 mean to you, the private owner or business executive, who depends upon his plane to provide the maximum in safe, efficient, and pleasurable transportation?

It means that all you have to do is turn on the L-2 engage switch and then sit back comfortably for the entire trip, regardless of its length or the weather you encounter, without once touching the airplane controls except for the actual takeoff and landing. (As a matter of fact, the sensitivity of the L-2 is such that it will even take off and land your plane automatically, although it is not designed or recommended for this.) On a long trip the constant muscular effort and nervous strain of manually controlling your plane tax your energy and mental alertness to a considerable, sometimes dangerous, degree. Relieved of this fatiguing burden by the L-2, you will remain physically and mentally relaxed for the brain work that safe flying requires. You will be able to fly many more hours a day than you ever did before and still feel refreshed enough to go about your business when you land.

IT MEANS SMOOTHER FLYING and consequently less airsickness for your passengers and greater comfort for yourself. In rough air the L-2 checks the airplane's rolling, pitching, and yawing movements *before* they develop any appreciable magnitude.

It means that while the L-2 flies your plane, you will be completely free to converse with your passengers; handle your radio communications; write down the weather sequences and winds aloft; make entries in your position log; figure your ETA's; re-plot your course on the chart in case of bad weather; attend to your numerous duties after takeoff and before landings; keep a lookout for other traffic, etc. And it means, furthermore, that you will be able to do all these things leisurely, undistractedly, and accurately.

IT MEANS GREATLY INCREASED safety while you maneuver at low altitude and low airspeed to observe roof markers, check points, strange fields, runway conditions, wind socks, etc. While your attention is outside the plane, the plane can be maneuvered automatically and safely in perfect turns and constant altitude.

It means greatly increased accuracy in navigation. Most navigational difficulties are caused not so much by poor calculation as by the poor steering brought on by compass errors, rough air, restricted visibility, and pilot fatigue. The L-2 will hold an accurate course in the roughest air.

It means that you fly faster and use less gas because you are able to fly straighter, because you are able to hold your altitude and maximum cruising speed once you have established them, and because you are able to maintain efficient constant-rate climbs and descents.

IT MEANS COMPLETELY AUTOMATIC control when emergencies occur. For example, in case of engine failure in multi-engine aircraft, the L-2 will instantly correct for the yaw due to unbalanced power and automatically hold the plane straight and level. An owner of a single-engine airplane equipped with an L-2 Autopilot claims that it recently saved his airplane by taking over the flying when an engine fuel-pump failure required his full attention to pumping gas by hand.

The L-2 can mean the difference between life and death for the VFR pilot

THE L-2 STABILIZES YOUR PLANE AUTOMATICALLY

(Amount of deviation shown here has been deliberately exaggerated. In actual practice, the L-2 prevents deviations before they develop.)

When a gust hits and a wing goes down...

the L-2 goes into action instantly, applying exactly the right amount of corrective control.

If for any reason the plane is thrown off the established pitch attitude...

the L-2 elevator servo brings it back. Necessary trim changes are made automatically.

If the plane deviates by even a single degree from the established heading...

the L-2 rudder servo immediately applies a proportionate amount of correction, but without lag or overswing.

is here... and it's great!

accidentally caught off base in instrument weather. Although Lear does not recommend intentional instrument flying with the L-2 unless you are properly licensed and equipped for such flying, it is a known fact that practically every pilot sometimes gets into conditions beyond his equipment and training. However, bad weather makes little difference to the L-2—it flies just as well in zero-zero conditions as it does in CAVU. A test pilot flying a Bonanza equipped with a Lear L-2 Autopilot deliberately entered a cold-front thunderstorm and came out on exactly the same heading he went in, although the hail-laden currents within the storm were so violent that the paint was stripped bare from the leading edge of his wing. No structural damage occurred, however, because the L-2 kept the plane in a constant attitude—no dives, no high "g" pull-outs.

It means greatly increased peace of mind while flying at night, which can also be treacherous to the non-instrument pilot.

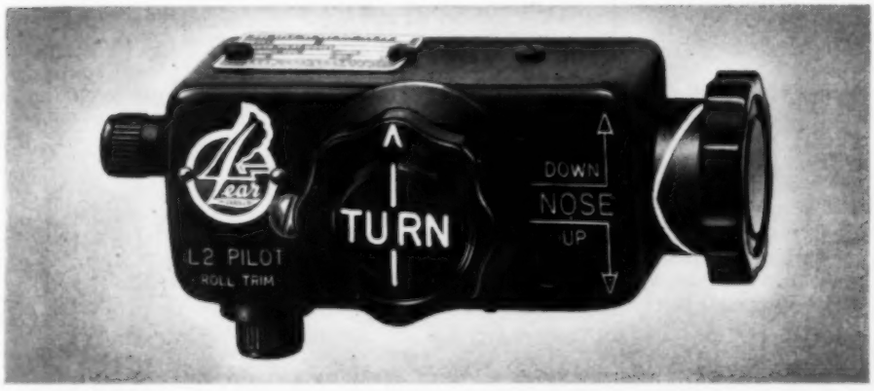
FOR THE QUALIFIED INSTRUMENT PILOT the L-2 has as many advantages as it has for the fair weather pilot. It means, first of all, relief from the strain and hypnosis dangers of prolonged instrument flying. With all due respect to your ability, there isn't a pilot in the world who can do as good a job on the "gauges" as the L-2.

Flying with the L-2 takes most of the grief out of radio range problems, beam bracketing, and ILS approaches. To change course you merely rotate the "Turn" knob on the Controller. Your plane turns smoothly and automatically, and stops turning exactly—but *exactly*—where you want it to stop. To descend, you merely rotate the "Pitch" knob on the Controller for the desired rate of descent, and the L-2 will bring you down from the markers strictly according to the book.

"Holding" over a fix with the L-2 is simplicity itself. You do it just as the airlines do—with a minimum of effort and at exactly the altitude and position at which you are supposed to hold.

THE L-2 IS SIMPLE TO OPERATE, easy to install, and weighs less than 30 pounds (without gyros). The price of the L-2 is $2990, and includes a set of excellent directional and horizon gyros, which replace the ones you normally use for visual reference. The L-2 also contains provisions for adding the Lear Automatic Approach Coupler and the Lear Automatic Altitude Control.

With the Lear L-2 Autopilot in your plane your experience of flying will have no resemblance to anything you have known in the past. You will discover air transportation at its best, its safest, and its most enjoyable. You will certainly want to know more about this remarkable instrument, so we have prepared a comprehensive book entitled *The Lear L-2 Autopilot* which describes its operation and functions in full detail. We invite you to send for your copy today—free, of course.



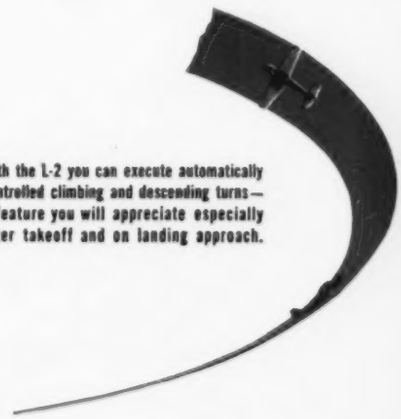
The L-2 is unbelievably easy to operate. Turn on the engage switch and your plane is under complete stabilized control on all three axes! To make a turn, simply rotate the "Turn" knob in the desired direction. Stop the turn by moving the knob back to the neutral position. To climb, just roll the "Pitch" knob backward. To descend, roll it forward. The L-2 can be easily overpowered by the pilot, and instantly disengaged by the flip of a fingertip switch on the control wheel. Automatic trim tab control keeps the plane constantly in trim on the pitch axis, thus assuring a normal, no-load condition on the elevators whenever the L-2 is suddenly disengaged to permit manual flight.

LEAR INCORPORATED
GRAND RAPIDS, MICH.
LOS ANGELES, CALIF. • ELYRIA, OHIO
Export Representatives: Lear International Export Corp., New York, N.Y.
Canadian General Electric Company, Limited, Toronto, Canada

THE L-2 MANEUVERS YOUR PLANE AUTOMATICALLY

You get a smoothly coordinated, constant-bank turn by simply rotating the "Turn" knob on the Controller. A great aid to accuracy in contact flying—invaluable for instrument and night flying.

The L-2 will hold your plane automatically in a safe constant-rate climb or descent, at the same time maintaining a fixed heading and a wing-level attitude.



With the L-2 you can execute automatically controlled climbing and descending turns—a feature you will appreciate especially after takeoff and on landing approach.

TESTED and PROVEN

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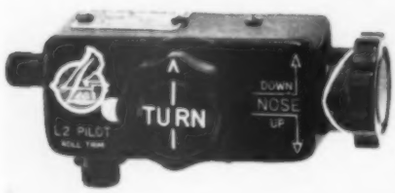
Lear Automatic Pilot



Through skillful engineering and design Lear has developed the new L-2 Autopilot weighing only 30 pounds. Yet, new as it is, the Lear L-2 Autopilot already has many thousands of hours usage in Navions, Bonanzas, Cessnas, DC-3's, Lodestars and Twin Beeches. It has been tested and proven by these aircraft owners who agree that the Lear L-2 Autopilot is the answer to their transportation needs for comfortable, safe all-weather flying.

THE LEAR L-2 AUTOPILOT GIVES YOU:

- **Smoother Flying**
- **Freedom of Hands for Map or Radio Work**
- **Greatly Increased Safety**
- **Automatic Control in Flight**
- **Increased Navigation Accuracy**
- **Stability in Instrument Weather**

We invite you to let us demonstrate this remarkable Lear L-2 Autopilot without obligation.

ANDERSON AIR ACTIVITIES

Municipal Airport
Milwaukee, Wisconsin

Laurels for Lear

Miniaturized Autopilot wins Collier Trophy

Climaxing many brilliant radio and electro-mechanical developments, William P. Lear's miniaturized automatic pilot for jet fighters, from which a civilian version has been developed for lightplanes and transports, has brought to him aviation's highest award, the 1950 Robert J. Collier Trophy. President Truman made the presentation in ceremonies in the White House after the National Aeronautic Association named Lear recipient of the coveted award for the "greatest achievement in aviation in America during the previous year."

Lear's achievement was cited by President Truman in making the presentation—"for his development, perfection, application and production of the Lear F-5 Automatic Pilot and Automatic Approach Control Coupler System, which makes possible the safe landing of jet aircraft regardless of extreme weather or visibility conditions."

Shortly after the award, Lear, Inc., of which Bill Lear is chairman and founder, announced additional Air Force contracts in excess of $8,000,000 for F-5 autopilots and automatic approach couplers, boosting the total Lear backlog to over $25,500,000, most of which is for autopilots, attitude indicating and other gyro instruments.

Lear's main plant is in Grand Rapids, Michigan, and the firm operates the Lear-Romec Division at Elyria, Ohio, and the LearCal Division in Los Angeles. At Grand Rapids it manufactures its automatic pilots, gyro instruments, electric motor-driven actuators and automatic controls. At Romec it makes aircraft fuel and air pumps, and at LearCal it makes aircraft radio and autopilots for executive and personal aircraft.

For lightplanes, the civilian version of the F-5 is known as the L-2—the first autopilot to have wide application in personal and executive aircraft. It is priced at $2,990 and has been greeted with wide enthusiasm, having far-reaching effect in extending the horizons of the aircraft owner, increasing the usefulness of private planes and influencing growth of the private aircraft business.

Development of the Lear autopilot and automatic approach control coupler system took six years, Bill Lear personally heading the design activity and doing the test flying himself. He flew over 3,600 hrs. testing the autopilot in C-47's, C-60's, C-45's, B-26's, Bonanzas and Navions, flying under all-weather conditions, day and night, summer and winter. He describes his F-5 with approach coupler like this:

"The F-5 automatic pilot is an electro-mechanical device which automatically holds an aircraft on any predetermined course at any altitude, and will also allow the pilot to make alteration of this course at will. Turns are beautifully co-ordinated, flying fast or slow or in climb or dive.

"It is made up of three main parts which closely parallel a human pilot's control system. The gyroscopes are its eyes; they sense any deviation from the course or attitude. The amplifier is the brain. It controls the servos which are the muscles that apply the force to the control surfaces. There are three sets of eyes, three sets of brains and three sets of muscles—not one 'man' but three, all intent on their special job and oblivious to distractions, unconcerned about conditions such as weather and the enemy and totally without fear.

"The F-5 provides in addition a couple of extra little but important 'people' to watch over the operation. One is the automatic trim tab. It always keeps the manual trim tab adjusted so that the main servo has the least work to do, and solves the problem of airplane trimming so that whenever the autopilot is turned off the airplane doesn't dive or climb. Another little 'fellow' equally important slaves the directional gyro so that it always points to the proper magnetic direction. This enables the ship to fly a straight magnetic heading. Last, but not least, there is another little 'man' who keeps the airplane at any selected altitude.

"All of these are supplemented by the two vital course steerers when making an automatic ILS let-down to the runway. One keeps the airplane on the localizer or horizontal path and

WILLIAM P. LEAR, chairman and founder of Lear, Inc., which operates plants at Grand Rapids, Mich., Elyria, Ohio, and Los Angeles, California. His perfection of F-5 automatic pilot for USAF was acclaimed as greatest aviation achievement during the past year.

the other keeps it sliding down the vertical or glide path straight to the runway.

"This makes a total of seven separate eyes, brains and muscles which the F-5 has working for the human pilot, each having a separate and distinct job to perform. The result is superior to any one human pilot's effort; it is human to err and if one cannot do a number of things at once and do them well, the Lear F-5 is a worthwhile addition to flying."

Autopilot Accuracy Cited

Accuracy is one of the Lear autopilot's chief superiorities, others being light weight and small size. The Lear actuators which transform control signals into control forces have extremely high response rates to minimize control lag and associated hunting or flutter. These actuators employ a unique torque amplifier utilizing two differentially-mounted Lear magnetic-powder clutches to obtain a power amplification of 130 to 1. They are major contributors to the autopilot's operational precision.

Because of the Lear autopilot's extremely accurate control of an aircraft, Lear devised his automatic approach control coupler to convert Instrument Landing System radio signals to signals suitable for control of the autopilot. While the concept of this approach coupler-autopilot system is not new, the Lear system is described as the most accurate and compact device of its kind.

The glide path control is unique in that it utilizes two output signals, the first of which causes the plane to nose down from its trimmed level flight attitude and assume the glide

Introducing

the New

Lear Automatic Pilot

L2

As a pioneer distributor of Lear products, we are proud to offer to our customers the Lear L-2 Automatic Pilot which will bring new comfort and safety to your flying. We urge you to come in and let us demonstrate this remarkable Lear L-2 Autopilot. Weighs less than 30 pounds and costs only $2,990.

● **Lear manufactures the finest equipment money can buy.**

Radio installations are complete, compact, accessible for maintenance, and at-your-finger-tips. Custom installation shown above for Bonanza and right for Navion.

Our radio shop is properly equipped to make custom Lear radio installations in all models BEECH, NAVION and CESSNA aircraft at flat rates.

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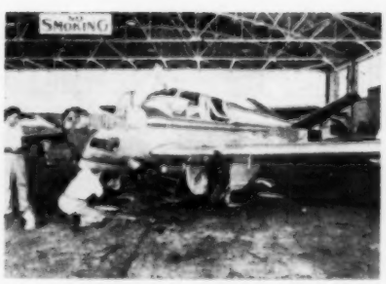
Our Continental factory trained engine specialists use only authorized parts. This means better engine performance and longer runs between overhaul.



Special maintenance equipment assures the best workmanship in the shortest time. We are equipped and experienced for work on all types of aircraft.

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You are invited to a demonstration of the new Lear L-2 Automatic Pilot.

TOPEKA AIRCRAFT SALES and SERVICE
MUNICIPAL AIRPORT TOPEKA, KANSAS

Tested and proven, the Lear L-2 Automatic Pilot is now available for delivery at the low cost of $2,990. Installation can be made by our factory trained staff at minimum cost.

The L-2 Autopilot is the answer to all-weather flying for business and private aircraft.

path at the time the beam is intersected. It is this signal which keeps the aircraft in the correct degree of glide. A second control signal, derived from the difference between attitude required by the glide path signal and actual aircraft attitude at any time, automatically trims the airplane to the glide path attitude. This provides more accurate following of the glide path beam and prevents any sudden change in pitch attitude upon disengaging the coupler, permitting safe approaches to within a few feet of the runway.

Both localizer and glide path circuits are responsive not only to the ILS indication of the aircraft's distance from the proper approach path but also to the rate at which the proper heading and attitude are being approached. This rate recognition effectively eliminates the hunting which would otherwise accompany the aircraft's search for proper course and glide path. Just before touching down, the pilot disengages the coupler, re-establishing manual control for the actual touch-down of the landing. It is interesting to note that, as a part of an Air Force Remote Flight Control System currently being developed by Lear, the autopilot is combined with radio control to accomplish remote flight control of drone aircraft.

The lighter civilian L-2 autopilot does not have the automatic approach coupler as standard equipment, but it may be added if desired. Without it, the L-2 weighs less than 30 lbs.

Bill Lear claims his autopilot will fly anything from a Bonanza to a B-36. Many owners of Bonanzas, Navions, Cessna 190's and larger private aircraft have ordered the L-2 for installation in their craft, and production is being increased steadily to fill the orders. Lear distributors are featuring the L-2 in their sales efforts. Other Lear products include the famous and widely used Lear VHF

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For more enjoyable flying...

Lear Automatic Pilot

The new Lear L-2 Autopilot brings to the private and business airplane owner airline comfort and dependability. This new unit weighing only 30 pounds brings all-weather flying into a reality. We invite you to come in for a demonstration.

The radio department of Ragsdale Flying Service offers quick service on the installation of Learadio Products. We offer flat rates. Satisfaction guaranteed.

Distributors of:

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RAGSDALE FLYING SERVICE
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Airmen's Calendar

Jan. 19-20—8 State Regional Transportation Conference sponsored by U. S. Chamber of Commerce and Oklahoma City Chamber of Commerce, Oklahoma City, Skirvin Hotel.

Jan. 29-Feb. 1—19th Annual Meeting, Institute of Aeronautical Sciences, Hotel Astor, New York.

Feb. 14-28—Annual Aviation Fiesta, Orlando, Fla.

Feb. 19-20—3rd National Agricultural Aviation Conference, Peabody Hotel, Memphis.

Mar. 12-13—Short Course, Aerial Equipment in Agriculture, Purdue University, West Lafayette, Indiana.

Mar. 16—6th Annual Flight Propulsion Meeting, Institute of Aeronautical Sciences, Hotel Carter, Cleveland, Ohio.

Omnimatic, ADF-12 Orienter and other Lear radios; a complete line of electro-mechanical products including miniature electric motors (some the size of a pencil eraser); precision electronic positioning controls; precision gear mechanisms and newly-developed fast-response electronic temperature and positioning controls; vertical gyro indicators for the USAF; and the Romec Division's line of aircraft pumps. ★ ★ ★

FIRST WITH THE FINEST PRODUCTS

In order to bring the finest in aviation products to our customers we chose Lear products. Lear has led the field in research and development keeping years ahead.

The New Lear L-2 Automatic Pilot is the first to be offered to the flying business man and private pilot for better safety and comfort. Our staff is prepared to demonstrate and install the Lear L-2 Autopilot.

The RAS radio shop is equipped to make custom Learadio installations at flat rates.

READING AVIATION SERVICE, INC.
READING MUNICIPAL AIRPORT
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Expert L-2 AUTOPILOT Service

NOW . . . Factory-authorized Lear L-2 Autopilot Installation Center!

- Factory-trained staff.
- Factory engineering and accessories.
- Factory-supervised calibration.

We have become Lear's largest ADF and radio distributor on the basis of sales volume, and proudly announce our appointment by Lear, Inc., as L-2 Autopilot Installation Center for the Southwest! Our men have just returned from Lear's West Coast and Michigan factories where they received training in L-2 Autopilot Installation and Servicing. In addition, the Lear factory will send an expert to our Center for final calibration of our initial L-2 Autopilot installations as added assurance of satisfactory operation. For the best in performance from all Lear products, visit General Aeronautics, Inc., Lear Sales and Service Specialists.

GENERAL AERONAUTICS, INC.
LESLIE H. BOWMAN, President
Meacham Field — Fort Worth, Texas
With Branch Offices at Municipal Airport, Cody, Wyo.

The Lear L-2 Automatic Pilot

Engineered for dependability, this new Autopilot is unbelievably easy to operate. Turn on the engage switch and your plane is under complete stabilized control on all three axes. Let us give you a demonstration of this remarkable new addition to the Lear list of fine products.

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Byrd Airport
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YINGLING AIRCRAFT, INC.
Municipal Airport, Wichita, Kan.
Specialist in
Lear Product Sales and Service

Our long experience with Lear products offers assurance of service satisfaction. All work is guaranteed and prices are on flat rate basis.

When your needs require the installation of the Lear L-2 Automatic Pilot you will find the factory trained staff and facilities of YINGLING AIRCRAFT, Inc., ready to serve you.

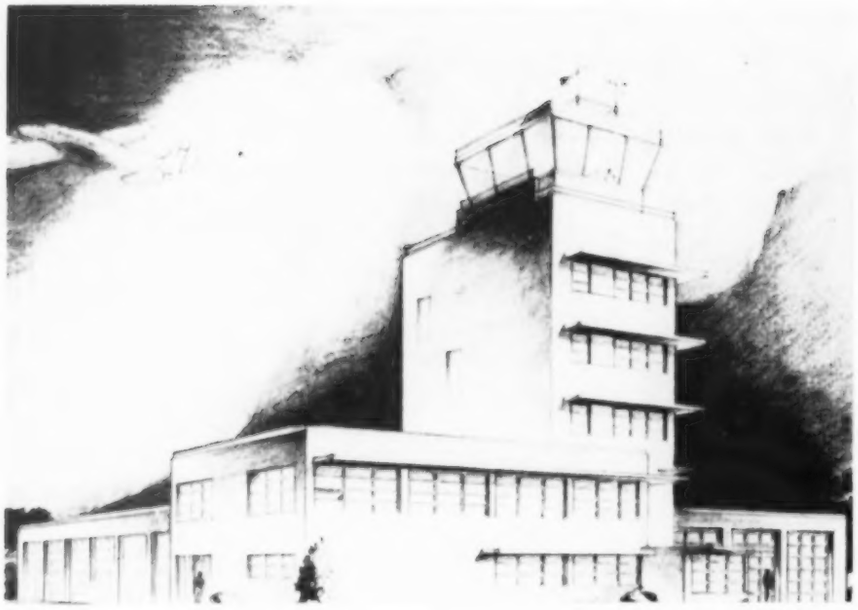
NOW!!
Another Lear First...

The development of the Lear L-2 Autopilot adds another to the long list of Lear products developed for safer and more comfortable flying.

One demonstration of the Lear L-2 Autopilot will convince you of the pleasure it will add to your flying.

Learadio products are the best on the market. Our radio shop can make custom installations to suit your individual requirements.

NORTHERN AIR SERVICE
Grand Rapids Airport — Grand Rapids, Michigan



BIGGER, BETTER TOWER for Kansas City's all-weather Municipal Airport is under construction as combination control tower and service building. In addition to CAA space requirements for surveillance radar, precision radar, ILS, high-intensity lighting and other traffic aids, $327,000 5-story structure houses 3-truck fire department with its kitchen, dormitory and other facilities; city aviation department and its motorized equipment. Aviation Director Louis R. Inwood expects its completion during June, 1951.
—(K. C. Aviation Dept. Drawing.)

Questions and Answers For Airport Operators

QUESTION: Ever since I started to read aviation periodicals and attend conventions and get-togethers I have had public relations dinned into my ears to the point where a repetition of it gives me goose pimples. I wonder if I even know what public relations is with respect to running airports, and I doubt if most of the people who have been using the words know what they mean either. Can you give me in simple language something that I can use on the subject?

ANSWER: We'll bet you stayed up all night thinking that one up. We can tell you only what we think is meant by public relations and our feelings may not coincide with the feelings of others. The term "public relations" is loosely used and frequently misused.

We think that public relations as a term means any condition of feeling, attitude or acceptance, good, bad or indifferent, arising from or fostered by any act, expression or omission, or any series or combination thereof in activities involving two or more persons, groups, agencies of business or government, or any combination thereof.

Actually, the most common meaning attached to the phrase is that public relations of a good sort is the result of an active effort to please and to create confidence in the product we have for sale or in ourselves.

It seems to us that there is no such thing as no public relations. Our relations with people are either good or bad, and when we are striving to make our relations with people good it appears to us to be an active effort, a campaign in other words, that goes beyond the normal relationship between people. If a merchant sells a package of chewing gum, he need normally only accept the coin and put it in the cash register. If he says "thank you," that's a little better public relations. But if he adds, "Come back again," that's good public relations. If on the other hand he doesn't say a word but just grabs your coin and throws it over on the cash register because it's only a small sale, you may get the idea that he doesn't give a darn whether you come in to buy something from him or not, and that's poor public relations.

If you walk up to a policeman in a strange city and ask him where 95 Broadway is and he gives you careful directions to reach that address, that's all you asked for. But if he gives you a little bit more than you asked for in the way of courtesy and a smile, that's good public relations. If he neglects to tell you that 95 Broadway burned down last week and lets you walk all the way over there, that's bad public relations.

In other words, good public relations is sincere and helpful.

Sometimes on airports we can so train our people and ourselves that those who are our customers or visitors are given good service, a good product, and a welcome. We may think that we have accomplished a full measure of good public relations but if we could add another touch to that such as a postcard to a transient who has purchased gasoline expressing our thanks and good will and inviting him back again, then we have added a little icing to the ordinary texture of our cake. On the other hand, if we gave him fast and convenient service and then made it difficult for him to pay his bill or get his credit card honored, you may be sure that this last little discourtesy will have destroyed all of the good impression made.

Good public relations is many times the result of an unconscious courtesy of manner or an innate desire to serve. Small things assume great importance in public relations. A grumbling greeting on the telephone, failure to maintain paper towel supplies in the washrooms, a dirty floor, a poor cup of coffee in a restaurant, a lost piece of baggage, or an unrepaired hole in the airport road, all of these may make a friend less friendly to the airport and a disbeliever in aviation firmer in his convictions. These are small things but in effect they are the attributes of a good neighbor.

Sometimes the things that displease people on airports are not the fault of the management of the airport but rather the fault of the tenant, lessees, or a concessionaire. It seems to us that a manager in going about his job must in time recognize the shortcomings of those who are on his airport to serve the public and he must in the public interest do his best to better conditions created by those tenants, lessees and concessionaires, for the public doesn't know the line of demarcation between his administration and the functions of private business on an airport. There is work to be done in this line. It is neither effortless nor self-starting. It concerns everybody. It affects service, support, salaries, revenues and good will. It plays an important role in the rela-

(Continued on page 45)

TEXACO HAS HELPED US BUILD AN ENVIABLE FLIGHT RECORD . . . WITH INVALUABLE TECHNICAL ASSISTANCE AND A GREAT AIRCRAFT ENGINE OIL

RAY C. SHRADER, VICE PRESIDENT IN CHARGE OF OPERATIONS BRANIFF INTERNATIONAL AIRWAYS

Braniff International Airways has flown more than a billion and a half passenger miles with one of the finest flight safety records in the history of aviation, and the latest in Braniff's impressive list of 17 safety citations is the National Safety Council's Ten Year Aviation Safety Award. In achieving this outstanding record, Braniff Airways has relied on the high quality of *Texaco Aircraft Engine Oil* and turned frequently to Texaco for technical help and service.

For nearly 20 years Braniff has been using *Texaco Aircraft Engine Oil* exclusively in its domestic operations from the Great Lakes to the Gulf of Mexico. "We are sold on *Texaco Aircraft Engine Oil* 100 per cent," says Braniff's Ray C. Shrader. And he goes on—

> "We have continued the use of *Texaco Aircraft Engine Oil* not just because it happened to be a high quality oil, but because you have made fine technical service available to us, and this superior service is one of the very important reasons why we have renewed our contract year after year."

Airlines everywhere are setting records for dependability, efficiency and maintenance economy with the help of Texaco Aviation Products and Texaco Lubrication Engineering Service. That is why—

> *More revenue airline miles in the U. S. are flown with Texaco Aircraft Engine Oil than with any other brand.*

Join the impressive list of Texaco-serviced airlines . . . for greater efficiency and lower maintenance costs. A Texaco Aviation Representative will gladly give you full details. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States or write The Texas Company, *Aviation Division*, 135 East 42nd Street, New York 17, N. Y.

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QUESTIONS AND ANSWERS

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Minnesota
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Whitney Memorial Airport
St. Cloud, Minnesota

New Jersey
MALLARD AIR SERVICE, INC.
Teterboro Air Terminal
Teterboro, New Jersey

New York
BUFFALO AERO. CORP.
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Buffalo, New York

Texas
GENERAL AERONAUTICS, INC.
Meacham Field
Fort Worth, Texas

Washington and Alaska
WASHINGTON AIRCRAFT & TRANSPORT CORP.
Boeing Field
Seattle, Washington

Mexico
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Mexico City, Mexico

Puerto Rico
DORADO AIRFIELD
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Ryan Navion
AUTHORIZED PARTS & SERVICE

QUESTIONS AND ANSWERS

(Continued from page 42)

tions between an airport and its neighbors. In all its activities, management faces the need of making the airport a good and useful neighbor to those who live, work or pass near its boundaries and under the moving shadows of its aircraft.

There is talk of mobilization today. You read it in the paper and you hear it over the radio, and if it comes, be sure your airport will play some part, however small. In such times the public may be expected to face shortages, restrictions, and perhaps hardships. Nerves get on edge and tempers are very near the surface. You as an airport manager will have more problems than you have today but we would recommend to you that you consider every action you expect to take, every restriction which you may be called upon to apply, and every safeguard necessary to an extent that you will be sure that you do not needlessly take such actions or impose such restrictions on the long suffering public.

When you are sure you have to follow a given path that does impose a difference in the privileges and usages of the flying public or the general public, make the best possible use of courtesy, education and explanation so that you will minimize the resentment that usually follows an unexplained action. If you have guards, let them be courteous ones. We have seen some whose most conspicuous garment was a holster and a gun and they showed the public that they felt that way.

If you must deprive the public of the use or an approach to any area on your airport, use signs but please don't say "Keep Out." Put a little courtesy into those signs and say "Please." We know there are some people who feel that they can't afford to obey a sign that says "Please" unless it says "Positively," but nevertheless there are still airports that haven't recovered their visitors in numbers because of the "Keep Out" signs that were used during World War II. We saw a sign one time that said "Don't loiter in this area." We know one airport manager who says if enough people will loiter in the public areas of his airport he will put in a soft drink machine and a popcorn machine and make some money out of them.

Finally, if you want to check on your own public relations, just sit down and think out how you and your family would like to be treated, then treat the public that way and you'll probably have the answer.

★ ★ ★

WHY WAIT?

(Continued from page 17)

open and increase the dollar volume of those airports. If civil aviation is to survive all-out military mobilization, the people of every community must recognize the value of America's civil air power to their health and welfare in time of emergency. That story must be told locally, not in the journals that speak only to aviation people who already know. That's why local civil defense units must be established now, today — not next week or next month.

We doubt if much interest can be stirred up among the busy executive owners and their pilots. Perhaps the extent of their participation will be registration and offers of aircraft and pilot services in case of catastrophe. And there will be cases where CAA agents or local defense officials won't help out. The job must be done independently, on our own initiative, using our own imagination without depending on Joe or John or Pete to start the ball rolling.

Civil Airmen rose to the occasion in the last war. They can do it again and even more effectively because we have more and better airplanes, more and better pilots, better communications and more useable equipment on more airports. The only missing link is the spirit and will to get in and pitch. With the national emergency now upon us that spirit should be born and translated into action.

★ ★ ★

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We wish for you the happiest and most prosperous New Year Ever.

Also, we would like to say THANKS for the business given us during the past year. Your confidence in our service and products has been an inspiration to all of us.

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JUST AMONG OURSELVES

(Continued from page 9)

airport service operators. No matter what monicker you give them, the fact remains that they are one of the most important segments of our civil air power in-being.

As the tempo of all-out mobilization speeds up, they become even more important not only to the community in which they base but to the nation's defense effort as well. Most of them are veteran, air-wise pilots who merchandise safe and fast transportation either through the sale and servicing of airplanes or with air taxi services. They form the principal expansible base for training the pilots and ground personnel we'll need to launch the air war phase of World War III, just as was the case in World War II.

Life for these rugged, individualistic airmen during the postwar years has been on the rough side economically. But now they are coming into their own. The weaklings have been weeded out by the inexorable laws of supply and demand. Those who are left are sturdy stock, brought up in the best traditions of American free enterprise. The airplanes they deal in are increasing in value every day, as are their physical inventories of parts and accessories. The single and twin-engine airplanes they maintain and hangar are owned and used by the most successful business men and corporations in America — business machines which have become an integral part of our modern economy.

If and when disaster strikes, these rugged individuals and the plane owners under their roofs will be among the first civilians to be called upon for a hundred and one jobs no other machine in existence can do so well, if at all. They don't need roads or bridges. They fly over the rubble. They land and take-off on the proverbial dime, getting in and out when all ground transportation is stalled—like they did in Texas City.

Every banker, and every downtown business man for that matter, interested in the civil defense strength of his community, might well check into the history, present status and business facts of local airport operators. But first, we suggest a briefing of what small planes have done in Korea. The ground forces and the Red Cross can tell the story. Then transplant that amazing record into your own community should disaster strike. The economic health and welfare of your local fixed-base operator is vitally worth thinking about. It strikes awfully close to home—at a critical time when all possible resources must be utilized to meet pressing needs.

THE COLLIER TROPHY

PRESENTATION of the Collier Trophy to William P. Lear for his development of the small, lightweight F-5 automatic pilot for jet aircraft brings deserved recognition to one of aviation's outstanding researchers and executives. One of a long series of brilliant developments by Lear, the F-5 with automatic approach coupler is officially described as making possible "the safe landing of jet aircraft regardless of weather or visibility conditions."

This and other outstanding developments in modern aviation serve to emphasize the growing importance of accessories to aircraft performance and reliability. While there will always be the yearning for simplicity in airplanes, the development of very high performance and dependability with safety demands equipment to aid and supplement both the basic airplane and its pilot. Now more than ever the accessories are vital and indispensable to the airplane. Aircraft designers can no longer ignore them in their studies —the modern aircraft's original design concept must include the accessories so necessary for performance, and the airframe manufacturer must, to a greater degree than ever, build around the accessories instead of waiting haphazardly to hang all the required gadgets onto his finished product at the end of the production line.

To those purists who condemn the trend to gadgets there is a worthwhile lesson in the Lear F-5's contribution to aircraft performance. While its great value is realized in automatic approach for all-weather landings, it has contributed in other ways. To us, it is also of tremendous significance in its ability to improve stability in the extremely fast and efficient designs. As speed skyrockets, designers face greatly-increased problems in reducing drag. This is especially true in the modification and even reduction of tail surfaces. Yaw and tail-wagging seem to be among the prices paid for very high performance.

This is where Bill Lear's ingenuity is contributing to progress. In addition to its automatic approach control for all-weather flying, his miniaturized F-5's gyros and electro-mechanical servos can sense and correct oscillations before trim is fully displaced. Thus it restores stability to fast aircraft. Here is compelling proof that aircraft design must recognize the importance of modern accessories.

Bill Lear has successfully met the challenge of progress.

★ ★ ★

BETTMANN ARCHIVE

Taking the measure of atmospheric pressure dates back to Torricelli's mercury column in 1643.

Subsequently, the aneroid—or fluidless—barometer was developed. But while it offered a much higher degree of portability, there was also a corresponding sacrifice of accuracy.

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is limited. This will become even more obvious if pilotless aircraft and missiles are to be made effective. Bill Lear has successfully met the challenge of progress. ★ ★ ★

AERO COMMANDER

(Continued from page 34)

Just how the war situation will affect the new firm and its plans for commercial deliveries beginning six months from now remains to be seen. No. 1 airplane is to go to Amis Construction Company for executive use. Other orders are on hand and the company is accepting additional orders for deliveries. It is also accepting applications from distributors.

Demonstrations to the military forces were begun last month when Aero Design sent the Model 520 production model to Wright Field, where it has been entered in the current competition for forthcoming liaison plane orders. A strong bid will be made for military contracts to produce the Aero Commander, as the firm believes it offers the ground forces and other branches a number of advantages for staff transportation, ambulance service, small troop and supply transport in and out of small, unprepared fields, and liaison work in general.

Speed for Transportation

As a study of the company's specifications and performance data will show, the Aero Commander appears to provide sufficient performance to make an investment in a light twin worthwhile. The Model 520's and Model 600's cruising speed of more than 185 mph. at 10,000 ft. and using 70 per cent of rated power means a great deal of transportation is available in the airplane for those who need it. The airplane's extremely low power-on stall speed with gear and flaps extended is far down the scale and, in fact, represents a speed range of almost 5 to 1 from stall to cruise. This kind of performance is what the market has been asking for.

The Aero Commander's single-engine performance puts emphasis on the great need for a full-feathering propeller in the 200-300-hp. category. Hartzell is now developing such a propeller for the Aero Commander, according to Aero Design officials. It was not said when it will be available. However, the use of supercharged Lycomings on the Model 600 compensates somewhat for the absence of full-feathering propellers. It adds, for example, 210-fpm. to the single-engine rate of climb and 4,000 ft. to the single-engine service ceiling—all with the dead engine's propeller windmilling. In the tables of weights, supercharging appears to add 56 lbs. to the empty weight of the Model 600. This appears to be cheap in view of the extra performance acquired, and to those who want performance at altitude the use of superchargers will be a "must," for it means excellent take-off and climb from places such as Denver, Albuquerque, Amarillo and Mexico City.

There is provision for only one generator, this being on the right engine, and those who insist on carrying out dual equipment as far as possible will comment on this. They will also give

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close study to the fuel system, desiring it to be as completely dual as possible. Fuel quantity is 120 gals. in the Aero Commander, carried in four bladder-type fuel cells located in the inboard wing sections. They feed into a 7-gal. fuselage sump tank, which supplies the engines.

Range is said to be 850 miles with the 120 gals., or about 4 hrs. 25 mins., at a fuel consumption of about 13 to 14 gals. per hr. for each engine.

Standard seating in the Aero Commander is two adjustable seats up front and a single rear seat, 53 ins. wide, for three persons. Special interior arrangements will provide for six occupants, either in separate chairs or with a combination of chairs and a larger sofa-type seat running lengthwise instead of across the cabin. The baggage compartment measures 48 inches wide by 30 inches deep across the fuselage behind the rear seat. If the lengthwise sofa is installed, this baggage compartment is reduced by more than one-half in space. Baggage allowable weight is specified at 133 lbs. in the compartment. Cabin volume is 146 cu. ft. with 40 sq. ft. of floor space. Baggage compartment has 64 cu. ft. of space.

Cabin Low To Ground

Advantages for visibility and easy entrance into the cabin are gained by use of the high wing and nose wheel. The cabin floor is only 19.5 ins. above the ground, making possible easy step-in entrance without climbing atop a wing. On the other hand, the high wing locates the propellers in line with the cabin, just behind the pilot's shoulders, and the propeller arc comes within 5 ins. of the fuselage. The 88-in. propeller blades clear the ground by 25 ins. Cabin entrance door is 48 ins. high and 28 ins. wide. The high wing will probably offer comfort from the stability standpoint. Leading-edge landing lights are specified.

Very effective flaps are indicated in the performance table and in photographs of the airplane. Flap area is not given but appears to be considerable, as is amount of flap travel. Flaps and landing gear are hydraulically operated with an electrically-driven pump and with provision for manual operation. The castoring nose wheel has a 600 by 6 tire size, as compared with main wheel tire size of 7.50 by 10. Main wheels have single-disc brakes.

FLIGHT MAGAZINE will review the Aero Commander's performance in a later issue, after the airplane has been trip-tested as the basis for analysis.★★★

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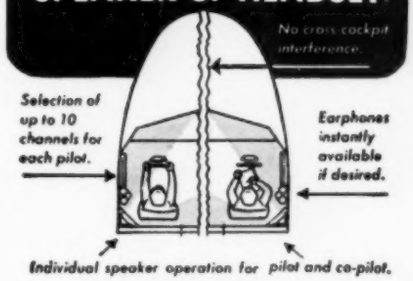
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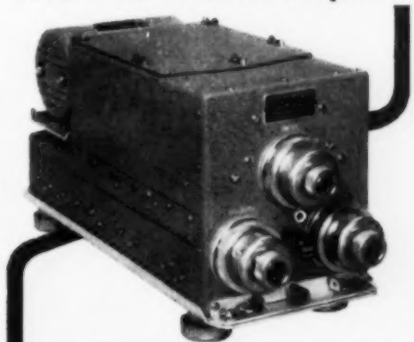

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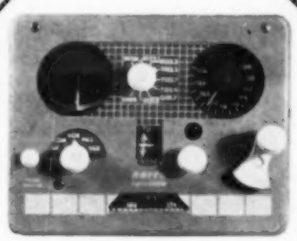

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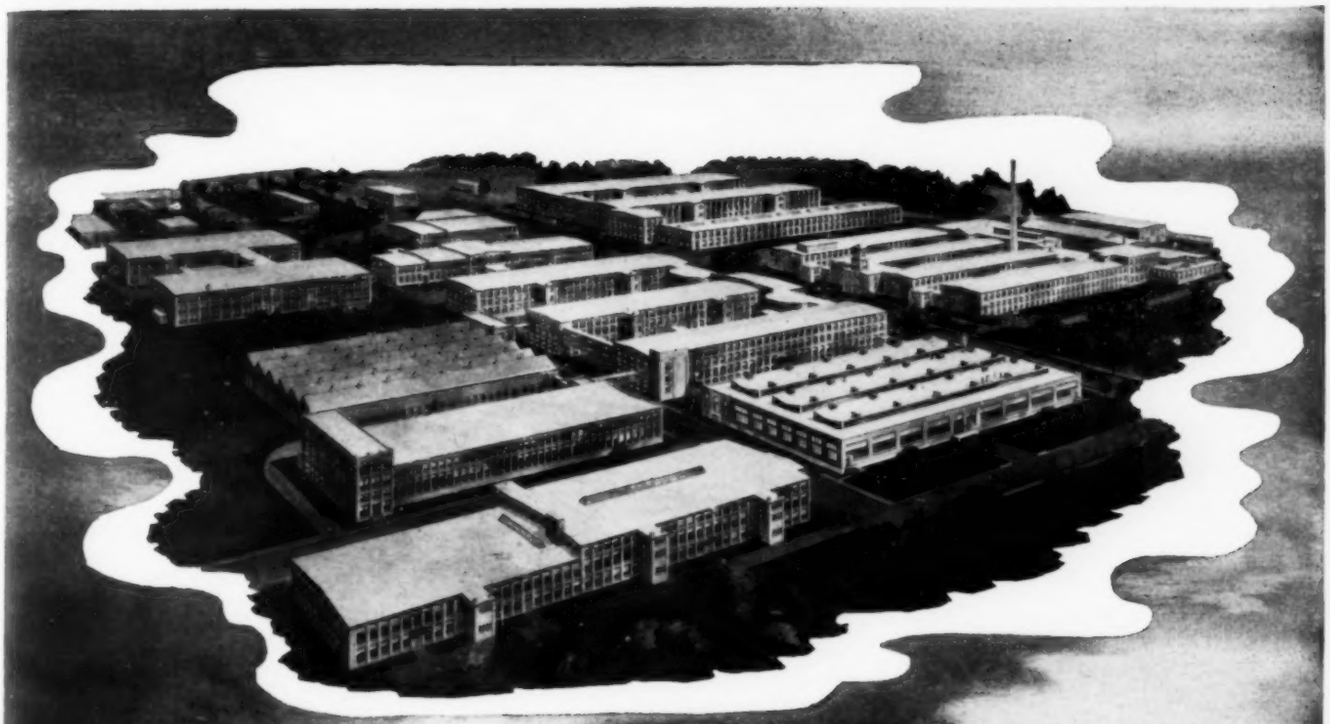

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